

FINDING OF NO SIGNIFICANT IMPACT FOR

INTERSTITIAL AREA RANGE ENVIRONMENTAL ASSESSMENT ON EGLIN AIR FORCE BASE, FLORIDA RCS 97-305 Revision 1, 2009

This finding, and the analysis upon which it is based, was prepared pursuant to the President's Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) and its implementing regulations as promulgated at 40 Code of Federal Regulations (CFR) Part 1500 (40 CFR 1500-1508) plus:

- US Air Force *Environmental Impact Analysis Process* as promulgated at 32 CFR Part 989.

The Department of the Air Force has conducted a Range Environmental Assessment (REA) of the potential environmental consequences associated with training activities in the Interstitial Area on Eglin Air Force Base (AFB), Florida. That April 2009 REA is hereby incorporated by reference into this finding.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The Proposed Action is for the 46th Test Wing Commander to establish a new authorized level of activity for the interstitial area that is based on an anticipated maximum usage. Demonstrating that the individual and cumulative effects of this usage level do not have significant environmental impact is the method for establishing the maximum threshold baseline, which is being identified as the *Range Environmental Impact Analysis Process (EIAP) Baseline*. The environmental analysis is accomplished by evaluating the effect that the military mission activities and expendables have on Eglin AFB's natural, physical, and cultural environment.

The Range analysis performed in this report allows for a cumulative look at the impact on Eglin AFB receptors from all mission activities occurring in the interstitial area. By implementing an authorized level of activity, Range management will be streamlined and cumulative environmental impacts will be more fully considered.

The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of training activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative in order to adequately cover the environmental analysis needed to support potential increases in training requirements as they occur. There were no alternatives eliminated from detailed analysis.

No Action Alternative

This alternative is defined as authorizing the level of activity approved in the *1998 Interstitial PEA*, which authorized a 200-percent increase in mission activity over the baseline level

| Report Documentation Page | | | <i>Form Approved OMB No. 0704-0188</i> | |
|---|------------------------------------|---|---|-----------------------------------|
| <p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> | | | | |
| 1. REPORT DATE APR 2009 | 2. REPORT TYPE | 3. DATES COVERED 00-00-2009 to 00-00-2009 | | |
| 4. TITLE AND SUBTITLE Interstitial Area Final Range Environmental Assessment, Revision 1 | | | 5a. CONTRACT NUMBER | |
| | | | 5b. GRANT NUMBER | |
| | | | 5c. PROGRAM ELEMENT NUMBER | |
| 6. AUTHOR(S) | | | 5d. PROJECT NUMBER | |
| | | | 5e. TASK NUMBER | |
| | | | 5f. WORK UNIT NUMBER | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 96 Civil Engineer Group (CEVSP),Environmental Analysis Section,Eglin AFB,FL,32542 | | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | | | 10. SPONSOR/MONITOR'S ACRONYM(S) | |
| | | | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) | |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited | | | | |
| 13. SUPPLEMENTARY NOTES | | | | |
| 14. ABSTRACT | | | | |
| 15. SUBJECT TERMS | | | | |
| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT Same as Report (SAR) | 18. NUMBER OF PAGES 301 |
| a. REPORT unclassified | b. ABSTRACT unclassified | c. THIS PAGE unclassified | 19a. NAME OF RESPONSIBLE PERSON | |

captured in the *Fiscal Year 1995 (FY95) Range Utilization Report* with an additional set of mitigations imposed on interstitial activities. The 200-percent increase applied to all types of interstitial activity, including troop movement on foot, troop movement by vehicle, bivouac use, and assault zone use, as well as the use of ordnance, pyrotechnics, and smokes.

Alternative 1: Authorize Current Level of Activity Plus Foreseeable Future Activities

Alternative 1 would authorize the current level of activity, plus foreseeable future activities. Foreseeable future activities include:

- An increase in the U.S. Army 6th Ranger Training Battalion (6RTB) training.
- Expansion of Alabama Army National Guard (ALARNG) training activities into the interstitial area.
- Ground training activities associated with the establishment of the U.S. Army 7th Special Forces Group (Airborne), or 7SFG(A).

Ground training and maneuvering activities associated with the ALARNG and 7SFG(A) are discussed in Appendix A of the REA. Other training components associated with the ALARNG and 7SFG(A), such as the establishment and use of small-arm ranges, are not included in this environmental assessment. These training areas and activities would be permanently established and would not involve troop movement or munitions use outside of the established range areas. Additionally, these activities have been or are currently being analyzed in detail in separate environmental analyses and, therefore, are not included in this environmental assessment. ALARNG activities were analyzed in the *Alabama Army National Guard Implementation of a Portion of the Master Plan for Cobb Training Site Final Environmental Assessment* and 7SFG(A) activities are analyzed in the *Proposed Implementation of the 2005 BRAC Decisions and Related Action at Eglin AFB Draft Environmental Impact Statement*, which was released to the public in March 2008. This alternative would be implemented using existing management actions (Appendix B).

Alternative 2: Alternative 1 With a 300-Percent Mission Surge Plus Additional Management Actions (Preferred Alternative)

This alternative is defined as authorizing the current level of activity as described under Alternative 1, plus a 300-percent increase in mission activity with additional management actions imposed on interstitial activities. A 300-percent increase would occur for all types of interstitial activity, including troop movement on foot, troop movement by vehicle, bivouac use, and assault zone use, as well as the use of ordnance, pyrotechnics, smokes, chaff, and flares. A 300-percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency. The same areas will be used for training, so that acreage of interstitial areas will not increase under Alternative 2; however, the frequency of use will increase.

Alternative 2 is the Preferred Alternative because it provides an authorized level of activity under a potential mission surge of 300 percent. The addition of management actions to Alternative 2 will allow for a surge of activity while maximizing environmental stewardship.

ENVIRONMENTAL IMPACTS

Analysis was conducted to determine the potential impacts to the human and natural environment resulting from the No Action Alternative, Alternative 1, and Alternative 2. No significant impacts to resources have been identified provided the management actions detailed in Appendix B of the REA are implemented. A detailed discussion of issues analyzed and management strategies used to reduce potential impacts is given in the *Interstitial Area REA*, Chapter 4: Environmental Consequences, and Appendix B: Proposed Management Activities.

PUBLIC NOTICE

A public notice was published in the *Northwest Florida Daily News* inviting the public to review and comment upon the Environmental Assessment and Draft Finding of No Significant Impact/Finding of No Practicable Alternative. The public comment period closed on 7 October 2008 and no public comments were received. State agency comments were received and have been addressed in Appendix I, *Public Involvement*, of the Final REA.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and the environmental analysis contained in the attached REA, and as summarized above, I find the proposed decision of the Air Force to implement Alternative 2, a 300 Percent Mission Surge Plus Additional Management Actions, will not have a significant impact on the human or natural environment; therefore, an environmental impact statement is not required. This analysis fulfills the requirements of the NEPA, the President's CEQ, and 32 CFR Part 989.



DENNIS D. YATES, Colonel, USAF
Commander, 96th Civil Engineer Group

12 JUN 09
Date

EGLIN AIR FORCE BASE FLORIDA

INTERSTITIAL AREA

FINAL RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1



APRIL 2009

INTERSTITIAL AREA

FINAL

RANGE ENVIRONMENTAL

ASSESSMENT, REVISION 1

Submitted to:

96 CEG/CEVSP

Environmental Analysis Section

Eglin Air Force Base, Florida

APRIL 2009



PRINTED ON RECYCLED PAPER

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| List of Tables..... | iv |
| List of Figures..... | v |
| List of Acronyms, Abbreviations, and Symbols..... | vi |
| | |
| 1. PURPOSE AND NEED FOR ACTION..... | 1-1 |
| 1.1 Introduction | 1-1 |
| 1.2 Proposed Action | 1-1 |
| 1.3 Scope of the Proposed Action | 1-5 |
| 1.4 Decision Description | 1-7 |
| 1.5 Issues | 1-7 |
| 1.5.1 Resource Areas Identified for Detailed Analysis..... | 1-7 |
| 1.6 Federal Permits, Licenses, and Entitlements | 1-10 |
| | |
| 2. ALTERNATIVES..... | 2-1 |
| 2.1 Introduction | 2-1 |
| 2.2 Alternatives Considered | 2-1 |
| 2.2.1 No Action Alternative | 2-1 |
| 2.2.2 Alternative 1: Authorize Current Level of Activity Plus Foreseeable Future Activities | 2-4 |
| 2.2.3 Alternative 2: Alternative 1 With a 300 Percent Mission Surge Plus Additional Management Actions (Preferred Alternative) | 2-4 |
| 2.3 Comparision of Alternatives..... | 2-8 |
| 2.4 Preferred Alternative | 2-8 |
| | |
| 3. AFFECTED ENVIRONMENT..... | 3-1 |
| 3.1 Soils | 3-1 |
| 3.2 Water Resources | 3-3 |
| 3.2.1 Groundwater Resources..... | 3-3 |
| 3.2.2 Surface Waters..... | 3-3 |
| 3.2.3 Wetlands..... | 3-5 |
| 3.2.4 Floodplains | 3-8 |
| 3.3 Air Quality..... | 3-8 |
| 3.3.1 Definition of the Resource..... | 3-8 |
| 3.3.2 Existing Conditions | 3-9 |
| 3.4 Noise..... | 3-10 |
| 3.4.1 Definition of the Resource..... | 3-10 |
| 3.4.2 Sound Metrics..... | 3-11 |
| 3.4.3 Effects of Noise | 3-12 |
| 3.4.4 Existing Conditions | 3-12 |
| 3.5 Chemical Materials..... | 3-13 |
| 3.5.1 Hazardous Materials | 3-13 |
| 3.5.2 Debris | 3-14 |
| 3.5.3 Environmental Restoration Program and Legacy Debris Pits..... | 3-14 |
| 3.6 Biological Resources..... | 3-18 |
| 3.6.1 Definition..... | 3-18 |
| 3.6.2 Region of Influence and Existing Conditions | 3-25 |
| 3.6.3 Analysis Methodology..... | 3-25 |
| 3.7 Land Use | 3-26 |
| 3.7.1 Military Use..... | 3-26 |
| 3.7.2 Recreational Use..... | 3-26 |
| 3.8 Safety..... | 3-29 |
| 3.8.1 Regulatory and Management Overview | 3-30 |
| 3.8.2 Standard Safety Procedures | 3-31 |
| 3.8.3 Unexploded Ordnance | 3-31 |

TABLE OF CONTENTS CONT'D

| | <u>Page</u> |
|---|-------------|
| 3.8.4 Restricted Access..... | 3-32 |
| 3.9 Socioeconomic Resources | 3-33 |
| 3.9.1 Environmental Justice..... | 3-33 |
| 3.9.2 Risks to Children | 3-34 |
| 3.9.3 Noise Complaints | 3-34 |
| 3.10 Cultural Resources | 3-38 |
| 4. ENVIRONMENTAL CONSEQUENCES | 4-1 |
| 4.1 Introduction | 4-1 |
| 4.2 Soils | 4-1 |
| 4.2.1 No Action Alternative | 4-1 |
| 4.2.2 Alternative 1 | 4-2 |
| 4.2.3 Alternative 2 | 4-3 |
| 4.3 Water Resources | 4-4 |
| 4.3.1 No Action Alternative | 4-8 |
| 4.3.2 Alternative 1 | 4-11 |
| 4.3.3 Alternative 2 | 4-13 |
| 4.4 Air Quality..... | 4-14 |
| 4.4.1 No Action Alternative | 4-14 |
| 4.4.2 Alternative 1 | 4-15 |
| 4.4.3 Alternative 2 | 4-16 |
| 4.4.4 Summary..... | 4-16 |
| 4.5 Noise..... | 4-17 |
| 4.5.1 No Action Alternative | 4-17 |
| 4.5.2 Alternative 1 | 4-17 |
| 4.5.3 Alternative 2 | 4-18 |
| 4.5.4 Summary..... | 4-19 |
| 4.6 Chemical Materials..... | 4-19 |
| 4.6.1 No Action Alternative | 4-19 |
| 4.6.2 Alternative 1 | 4-22 |
| 4.6.3 Alternative 2 | 4-23 |
| 4.7 Biological Resources | 4-24 |
| 4.7.1 No Action Alternative | 4-24 |
| 4.7.2 Alternative 1 | 4-32 |
| 4.7.3 Alternative 2 | 4-36 |
| 4.7.4 Summary..... | 4-40 |
| 4.8 Land Use and Recreation..... | 4-40 |
| 4.8.1 No Action Alternative | 4-40 |
| 4.8.2 Alternative 1 | 4-40 |
| 4.8.3 Alternative 2 | 4-41 |
| 4.9 Safety..... | 4-41 |
| 4.9.1 No Action Alternative | 4-41 |
| 4.9.2 Alternative 1 | 4-43 |
| 4.9.3 Alternative 2 | 4-44 |
| 4.10 Socioeconomic Resources | 4-44 |
| 4.10.1 No Action Alternative | 4-45 |
| 4.10.2 Alternative 1 | 4-45 |
| 4.10.3 Alternative 2 | 4-45 |
| 4.11 Cultural Resources | 4-46 |
| 4.11.1 No Action Alternative | 4-46 |
| 4.11.2 Alternative 1 | 4-46 |
| 4.11.3 Alternative 2 | 4-47 |
| 4.11.4 Summary..... | 4-47 |

TABLE OF CONTENTS CONT'D

| | <u>Page</u> |
|----------------------------|---|
| 5. LIST OF PREPARERS | 5-1 |
| 6. REFERENCES | 6-1 |
| APPENDIX A | Interstitial User Group Training Descriptions |
| APPENDIX B | Proposed Management Activities |
| APPENDIX C | Relevant Laws, Regulations, and Policies |
| APPENDIX D | Biological Resources |
| APPENDIX E | Environmental Restoration Program and Legacy Debris Pit Sites |
| APPENDIX F | Air Quality Supplemental Information |
| APPENDIX G | CZMA Determination |
| APPENDIX H | Biological Assessment |
| APPENDIX I | Public Involvement |

LIST OF TABLES

| | <u>Page</u> |
|--|-------------|
| Table 1-1. Regions of Eglin AFB Included and Excluded in the Interstitial Area ROI..... | 1-6 |
| Table 2-1. No Action Alternative (Previously Approved Level of Activity): Activities and Expendables..... | 2-2 |
| Table 2-2. Alternative 1 (Current Level of Activity Plus Foreseeable Future Activities): Activities and Expendables..... | 2-5 |
| Table 2-3. Alternative 2 (Alternative 1 Plus a 300 Percent Mission Surge): Activities and Expendables | 2-7 |
| Table 2-4. Summary of Issues and Potential Impacts Under All Alternatives..... | 2-9 |
| Table 3-1. Existing Condition of FDEP Planning Unit Basins Within the Interstitial Area | 3-7 |
| Table 3-2. Baseline Emissions Inventory for Okaloosa, Santa Rosa, and Walton Counties | 3-10 |
| Table 3-3. Relationship Between Noise Level and Percent of Population Highly Annoyed..... | 3-12 |
| Table 3-4. Active ERP Sites Located within the Interstitial Area ROI..... | 3-15 |
| Table 3-5. LDP Sites Located within the Interstitial Area ROI..... | 3-17 |
| Table 3-6. Recreational Permits Issued for Eglin AFB Between FY2005 and FY2007..... | 3-27 |
| Table 3-7. Hunting Seasons on Eglin AFB in FY2008..... | 3-27 |
| Table 3-8. Legacy Debris Pits and Surface Debris Locations in the Interstitial Area | 3-32 |
| Table 3-9. 2006 Noise Complaint Data | 3-37 |
| Table 3-10. 2006 Noise Complainant Data..... | 3-37 |
| Table 4-1. Potential for Mission Elements to Affect Water Resources | 4-5 |
| Table 4-2. No Action Alternative CBA Air Emissions Compared to the NAAQS | 4-15 |
| Table 4-3. Alternative 1 CBA Air Emissions Compared to the NAAQS | 4-15 |
| Table 4-4. Alternative 1 Emissions Compared to the ROI Emissions | 4-16 |
| Table 4-5. Alternative 2 CBA Air Emissions Compared to the NAAQS | 4-16 |
| Table 4-6. Alternative 2 Emissions Compared to the ROI Emissions | 4-16 |
| Table 4-7. 7SFG(A) Munitions Noise | 4-18 |
| Table 4-8. Ordnance Expended During Maximum Under No Action Alternative | 4-21 |
| Table 4-9. Munitions-Related Residue Under No Action Alternative | 4-21 |
| Table 4-10. Ordnance Expended During Maximum Under Alternative 1 | 4-22 |
| Table 4-11. Munitions-Related Residue Under Alternative 1 | 4-23 |
| Table 4-12. Ordnance Expended During Maximum Under Alternative 2 | 4-23 |
| Table 4-13. Munitions-Related Residue Under Alternative 2 | 4-24 |
| Table 4-14. Red-Cockaded Woodpecker Response to Vehicle Noise and Disturbance | 4-27 |
| Table 4-15. Wildfires From Military Missions on Eglin AFB from 2000 to 2007 | 4-29 |
| Table 4-16. Comparison of Sensitive Habitats and Species Between No Action Alternative and Alternative 1..... | 4-32 |
| Table 4-17. Restricted Access from Troop Movement, No Action Alternative | 4-42 |
| Table 4-18. Restricted Access from Bivouac Sites, No Action Alternative | 4-42 |
| Table 4-19. Restricted Access from Ordnance, No Action Alternative | 4-43 |
| Table 4-20. Summary of Restricted Access in the Interstitial Area Under the No Action Alternative | 4-43 |
| Table 4-21. Summary of Restricted Access in the Interstitial Area Under Alternative 1 | 4-44 |
| Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin | E-1 |
| Table E-2. LDP Sites Found in the Region of Influence on the Interstitial Area of Eglin..... | E-11 |

LIST OF FIGURES

| | <u>Page</u> |
|---|-------------|
| Figure 1-1. Land and Water Ranges of the Eglin Military Complex | 1-2 |
| Figure 1-2. Interstitial Area Region of Influence | 1-3 |
| Figure 2-1. Interstitial Training Areas Utilized by Active User Groups Under the No Action Alternative | 2-3 |
| Figure 2-2. User Group Training Areas Under Alternative 1 and Alternative 2 | 2-6 |
| Figure 3-1. Soils on Eglin AFB | 3-2 |
| Figure 3-2. Water Resources on Eglin AFB | 3-4 |
| Figure 3-3. Impaired Waters on or Adjacent to Eglin AFB | 3-6 |
| Figure 3-4. ERP and LDP Sites Located on Eglin AFB | 3-16 |
| Figure 3-5. Ecological Associations Within Eglin AFB Interstitial Areas | 3-19 |
| Figure 3-6. Significant Botanical Sites Within Eglin AFB Interstitial Areas | 3-20 |
| Figure 3-7. Outstanding Natural Areas Within Eglin AFB Interstitial Areas | 3-21 |
| Figure 3-8. High Quality Natural Areas Within Eglin AFB Interstitial Areas | 3-22 |
| Figure 3-9. Red-Cockaded Woodpecker Cavity Trees and Foraging Areas Within Eglin AFB Interstitial Areas | 3-23 |
| Figure 3-10. Sensitive Species (Other Than RCW) Within Eglin AFB Interstitial Areas | 3-24 |
| Figure 3-11. Recreational Land Use and Closed Areas in the Interstitial Training Area | 3-28 |
| Figure 3-12. Communities With High Minority and Low Income Populations as Compared to County | 3-35 |
| Figure 3-13. Communities With a High Percentage of Children Under 18 as Compared to County Averages | 3-36 |

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

| | |
|---------------------|--|
| 23 STS | 23 rd Special Tactics Squadron |
| 6RTB | U.S. Army 6 th Ranger Training Battalion |
| 7SFG(A) | U.S. Army 7 th Special Forces Group (Airborne) |
| 96 CEG/CEVH | 96 th Civil Engineer Group Cultural Resources Branch |
| 96 CEG/CEVR | 96 th Civil Engineer Group Environmental Restoration Branch |
| 96 CEG/CEVSN | 96 th Civil Engineer Group Natural Resources Section |
| 96 GCTS | 96 th Ground Combat Training Squadron |
| AAC | Air Armament Center |
| AFB | Air Force Base |
| AFDTC | Air Force Development Test Center |
| AFI | Air Force Instruction |
| AFSOC | Air Force Special Operations Command |
| AGOS | Air-Ground Operations School |
| ALARNG | Alabama Army National Guard |
| ARG/MEU | Amphibious Ready Group/Marine Expeditionary Unit |
| AST | Advanced Skills Training |
| ATV | All-Terrain Vehicle |
| Aux Fld | Auxiliary Field |
| CAA | Clean Air Act |
| CAS | Close Air Support |
| CATEX | Categorical Exclusion |
| CCA | Candidate Conservation Agreement |
| CDNL | C-Weighted Day-Night Sound Level |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CO | Carbon Monoxide |
| CWA | Clean Water Act |
| dB | Decibel |
| dBA | A-weighted Decibel |
| dBc | C-weighted Decibel |
| DNL | Day-Night Average Sound Level |
| DoD | Department of Defense |
| DODIC | Department of Defense Identification Code |
| DZ | Drop Zone |
| EBD | Environmental Baseline Document |
| EIAP | Environmental Impact Analysis Process |
| ERP | Environmental Restoration Program |
| FDEP | Florida Department of Environmental Protection |
| FDOT | Florida Department of Transportation |
| FICON | Federal Interagency Committee on Noise |
| FICUN | Federal Interagency Committee on Urban Noise |
| FLARNG | Florida Army National Guard |
| FY | Fiscal Year |
| GBS | Ground Burst Simulator |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| HAVE ACE | A subgroup of the U.S. Army Special Forces |
| HLZ | Helicopter Landing Zone |
| HMMWV | High Mobility Multipurpose Wheeled Vehicle |
| HQ | Headquarters |
| Hz | Hertz |
| ICS | Individual/Crew/Squad |
| IPT | Integrated Planning Team |
| IRP | Installation Restoration Program |

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

| | |
|-------------------------|---|
| ITAM | Integrated Training Area Management |
| IWR | Impaired Waters Rule |
| km² | Square Kilometers |
| kw | Kilowatts |
| LDP | Legacy Debris Pit |
| L_{max} | Maximum Sound Level |
| LMTV | Light Medium Tactical Vehicle |
| LUC | Land Use Control |
| LZ | Landing Zone |
| MGTA | Military Ground Training Area |
| mi² | Square Miles |
| MLRS | Multiple Launch Rocket System |
| mm | Millimeters |
| MMRP | Military Munitions Response Program |
| MOU | Memorandum of Understanding |
| MREs | Meals-Ready-to-Eat |
| MSL | Mean Sea Level |
| NAAQS | National Ambient Air Quality Standards |
| NEI | National Emissions Inventory |
| NEPA | National Environmental Policy Act |
| NO_x | Nitrogen Oxides |
| NRHP | National Register of Historic Places |
| O₃ | Ozone |
| Pb | Lead |
| PBT | Persistent Bioaccumulative Toxic |
| PEA | Programmatic Environmental Assessment |
| pH | A Measure of Acidity or Alkalinity |
| PK 15(met) | Peak Noise Exceeded by 15 Percent of Firing Events |
| PM₁₀ | Particulate Matter less than or Equal to 10 Microns in Diameter |
| ppm | Parts per Million |
| PSD | Prevention of Significant Deterioration |
| RCRA | Resource Conservation and Recovery Act |
| RDT&E | Research, Development, Test, and Evaluation |
| ROI | Region of Influence |
| SEE | Small Emplacement Excavator |
| SEL | Sound Exposure Level |
| SER | Significant Emissions Rate |
| SO_x | Sulfur Oxides |
| SPCC | Spill Prevention, Control, and Countermeasures |
| TA | Test Area |
| TRI | Toxic Release Inventory |
| USACE | U.S. Army Corps of Engineers |
| USACHPPM | U.S. Army Center for Health Promotion and Preventive Medicine |
| USAF | U.S. Air Force |
| USC | U.S. Code |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| UWO | Underwater Ordnance |
| UXO | Unexploded Ordnance |
| µg/m³ | Micrograms per Cubic Meter |

This page is intentionally blank.

1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Eglin Military Complex, located in the northwest Florida panhandle (Figure 1-1), is one of 19 component installations categorized as a Department of Defense (DoD) Major Range Test Facility Base. Eglin Air Force Base (AFB) is situated within three counties: Santa Rosa, Okaloosa, and Walton. The Eglin Military Complex also includes Cape San Blas located in Gulf County. Eglin AFB's primary function is to support research, development, test, and evaluation (RDT&E) of conventional weapons and electronic systems. It also provides support for individual and joint training of operational units. The Eglin Military Complex currently comprises four components (U.S. Air Force, 1996a), which do not include the cantonment or main base areas:

- 1) Test Areas/Sites
- 2) Interstitial Areas (areas beyond and between the test areas)
- 3) The Eglin Gulf Test Range
- 4) Airspace (overland and water)

The United States (U.S.) Air Force Air Armament Center (AAC) has responsibility for the Eglin Military Complex and for all its users, which include DoD, other government agencies, foreign countries, and private companies. For range operations, 96 CEG provides AAC with environmental analyses and necessary National Environmental Policy Act (NEPA) documentation to ensure compliance with U.S. Air Force policy and applicable federal, state, and local environmental laws and regulations.

AAC includes two wings and four directorates that collectively operate, manage, and support all activities on the Eglin Military Complex. AAC accomplishes its Range operations through the 46th Test Wing with support from the 96th Air Base Wing. The 46th Test Wing Commander is responsible for day-to-day scheduling, executing, and maintaining of this national asset. The continued DoD utilization of the Eglin Military Complex requires flexible and unencumbered access to land ranges and airspace, which support all of Eglin AFB's operations. Eglin AFB controls airspace overlying 127,868 square miles (mi^2), of which 2.5 percent (3,197 mi^2) is over land and 97.5 percent (124,671 mi^2) is over water.

1.2 PROPOSED ACTION

In a representative baseline year from the *2005 Interstitial Area Environmental Baseline Document (EBD)*, 12 user groups were identified as utilizing the interstitial area for ground training maneuvers. Figure 1-2 shows the interstitial areas on Eglin AFB. A complete description of all current training activities and locations of training are described in the *Interstitial Area EBD*, Chapter 2, Mission Summary (U.S. Air Force, 2005a) and summarized in Appendix A (copies of referenced documents can be obtained through Eglin AFB's Public Affairs Office).

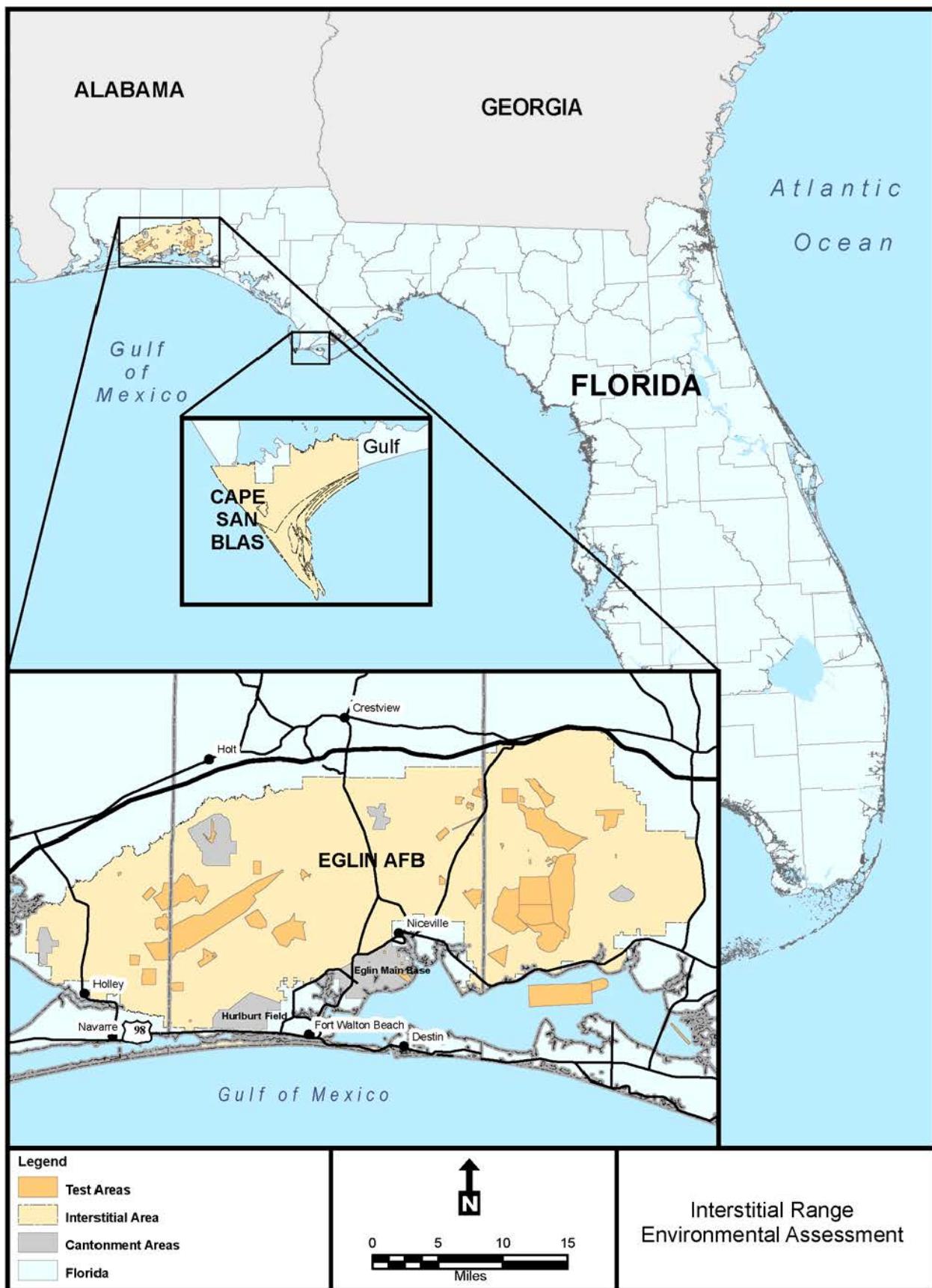
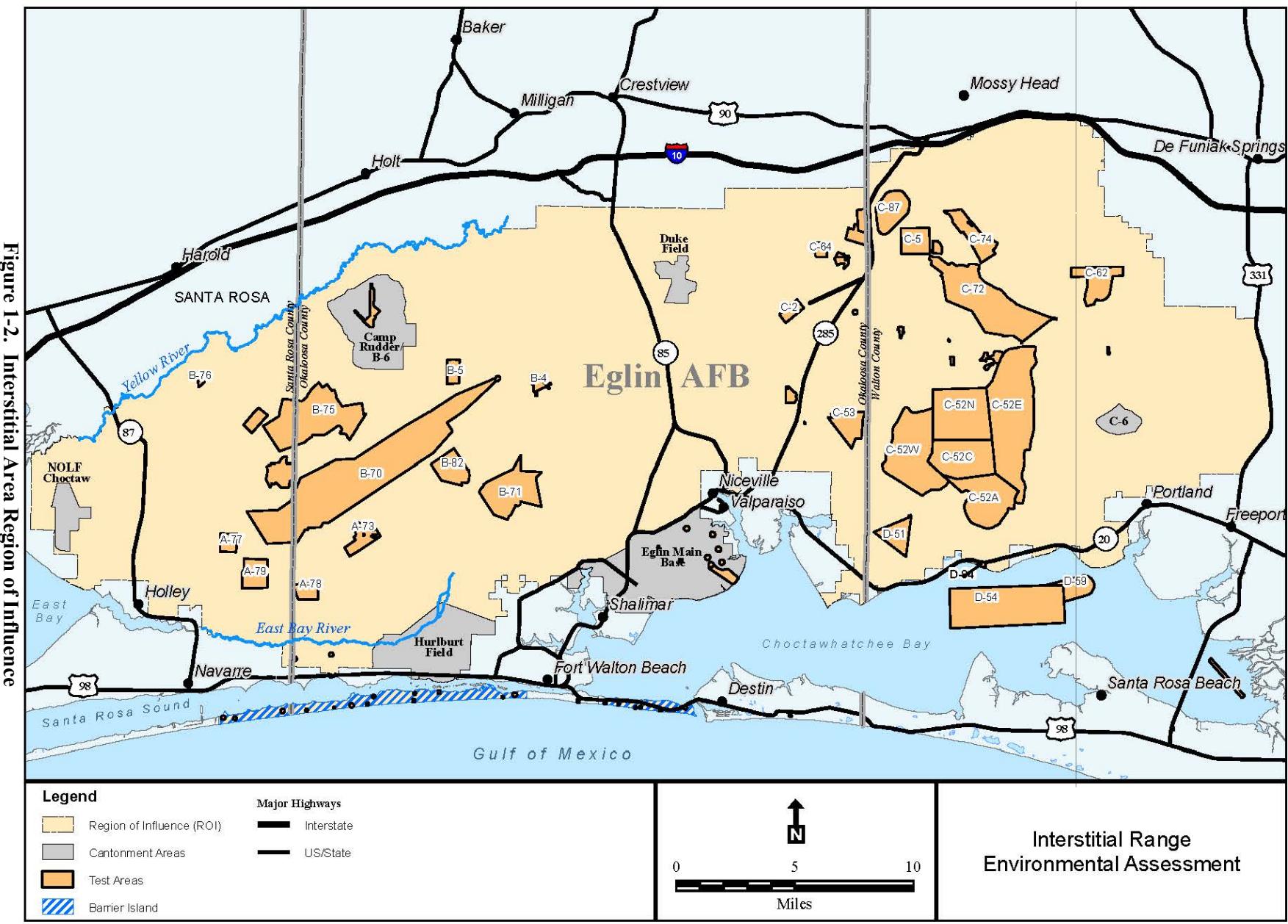


Figure 1-1. Land and Water Ranges of the Eglin Military Complex



Interstitial training operations may be broken down into three general categories:

- **Ground Training** - Includes dismounted maneuver and the firing of blank small-arms ammunition, blast simulators, hand-held flares, slap flares and smoke grenades. Some training includes wheeled vehicle support or maneuver on the existing road and trail network. It also includes establishment of bivouac sites (camping/overnight locations), which may include some limited ground-disturbing activities, and digging fighting positions.
- **Landing Zones (LZs)** - Includes landing zones, helicopter landing zones (HLZs), and parachute drop zones.
- **Air Operations Countermeasures** - Includes use of chaff, flares, signal, and smoke by military aircraft.

Major user groups of the interstitial area in the baseline year were the U.S. Army Rangers, U.S. Army HAVE ACE Special Forces, and U.S. Air Force 720th Special Tactics Group (STG) with associated squadrons aligned under them (such as U.S. Air Force 23rd Special Tactics Squadron [STS] and Advanced Skills Training [AST], which are stationed at Hurlburt Field). Occasionally, the STG hosts other STS CONUS/OCONUS units. The most frequent use of the interstitial area for ground training during the baseline year was by the AST and the 720th Special Tactics Group. The 23rd Special Tactics Squadron conducts small unit field training and the field portion of AST in the interstitial area. Additionally, the unit conducts parachute and paradrop operations. The 720th STG organizes, trains, and equips Special Tactics forces worldwide to integrate, synchronize, and/or control the elements of air and space power in the area of operations. The unit also provides long-range operational and logistics planning, and deploys command and control elements during special tactics force employment or deployment. These forces include combat controllers, pararescue, and special operations weathermen (Jeffers, 2008). The Florida phase of the Army Ranger training program out of Fort Benning, Georgia, is accomplished through practical exercises in platoon-level operations in the jungle/swamp environment of the interstitial area (U.S. Army, 2007). HAVE ACE primarily executes land navigation and reconnaissance training exercises in the interstitial area (U.S. Air Force, 2005a).

Large-scale exercises have been conducted on and over the Eglin Military Complex in the past. The entire Military Complex, including interstitial areas, was used for these massive exercises, which included thousands of personnel and hundreds of vehicles. Range-wide exercises of this magnitude are not expected in the future and were not considered in this analysis. Any such exercise in the future would require a separate environmental analysis.

The **Proposed Action** is to establish a new authorized level of activity for the interstitial area that is based on an anticipated maximum usage. Demonstrating that the individual and cumulative effects of this usage level do not have significant environmental impact is the method for establishing the maximum threshold baseline, which is being identified as the *Range Environmental Impact Analysis Process (EIAP) Baseline*. The environmental analysis is accomplished by evaluating the effect that the military mission activities and expendables have on Eglin AFB's natural, physical, and cultural environment. The military mission has been broadly identified as the effector of environmental impacts and Eglin AFB's environment has been identified as the receptor. Evaluation and quantification of this effector/receptor relationship is the scientific basis for the environmental analysis performed in this report.

The **purpose and need of the Proposed Action** is twofold as described in the following.

1. Purpose: to quickly and efficiently process new programs requesting access to the interstitial area during both routine and crisis situations

Need: to provide military users a quick response to priority needs during war or other significant military involvement, as well as maintain the current approval process for routine uses; and

2. Purpose: to update the NEPA analysis by re-evaluating the mission activities and by performing a cumulative environmental analysis of all mission activities.

Need: the need associated with this item is multifaceted and is described below.

Eglin AFB previously performed environmental analysis on mission activities in the interstitial area in the *1998 Interstitial Programmatic Environmental Assessment* (PEA) (U.S. Air Force, 1998a). Many of Eglin AFB's mission activities have changed since the original environmental analysis was done, requiring new environmental analysis to be performed. Currently, when approval for a new mission is requested, it may be categorically excluded from additional environmental analysis if it is similar in action to a mission that has been previously assessed and the assessment resulted in a finding of no significant environmental impact. The categorical exclusion (CATEX) designation is in accordance with NEPA and Air Force regulations (Council on Environmental Quality [CEQ] 32 CFR 989.13 and Air Force Instruction [AFI] 32-7061).

Since the time that some of these ongoing mission activities were originally assessed, and also since some of the mission activities that are used for CATEX purposes were assessed, changes have occurred at Eglin AFB that could affect environmental analysis. These changes, outlined below, create a need to re-evaluate the NEPA analysis individually and cumulatively.

- Additional species have been given federal and state protected status.
- Species that were not previously known to exist at Eglin AFB have been discovered.
- Additional cultural resources have been discovered and documented.
- The population of communities along Eglin AFB's borders has increased.
- Air Force regulations have changed.
- Military missions and weapons systems have evolved.

The Range analysis performed in this report allows for a cumulative look at the impact on Eglin AFB receptors from all mission activities occurring in the interstitial area. By implementing an authorized level of activity, Range management will be streamlined and cumulative environmental impacts will be more fully considered.

1.3 SCOPE OF THE PROPOSED ACTION

This document encompasses only mission activities that occur in the interstitial area of the Eglin Military Complex (Figure 1-2). Test area activities are covered in individual Test Area Range Environmental Assessments (formerly known as "Programmatic" Environmental Assessments). Ground training activities on Santa Rosa Island are covered in the *Santa Rosa Island*

Programmatic Environmental Assessment and are not considered part of the interstitial area (U.S. Air Force, 2005b).

The Region of Influence (ROI) for the interstitial area is defined as those areas within Eglin AFB's contiguous Range excluding the established test areas, two cantonment areas (Eglin Main Base, Hurlburt Field), Santa Rosa Island, Cape San Blas, Eglin Gulf Test and Training Range, and leased lands (e.g., Okaloosa County Fair Grounds and the Okaloosa County Correctional Institution). Certain areas were either included or excluded from the ROI because of their usage. Duke Field, Camp Rudder, and Choctaw Field were included because these areas are incorporated in a great deal of the training conducted in the interstitial area (see Appendix B for special considerations for these areas). Test Area (TA) D-84, otherwise referred to as the Fort Rucker Recreation Area, and TA A-85 (Wynn Haven Beach) were added to this document because they are used for ground training. Table 1-1 lists the areas included in and excluded from the ROI and Figure 1-2 shows the ROI. The interstitial area consists of approximately 385,000 acres of the Eglin Military Complex. The test areas comprise 50,000 acres and the cantonment areas comprise 28,000 acres of Eglin AFB's Reservation, which is approximately 463,000 total acres (Figure 1-1).

Table 1-1. Regions of Eglin AFB Included and Excluded in the Interstitial Area ROI

| Included | Excluded |
|--|--|
| Areas Outside Active Test Areas | Active Test Areas (A-20, A-21, A-30, A-31, A-73, A-77, A-78, A-79, B-5, B-7, B-12, B-70 ^a , B-71, B-75, B-76, B-82, C-1, C-2, C-3, C-6, C-7, C-52, C-53, C-61, C-62, C-64, C-72, C-74, D-51, B-5 ALS, C-5 ALS, C-62 ALS, Aux Fld 1, Aux Fld 2, Aux Fld 7, Aux Fld 8, HLZ C-7, HLZ A-78) |
| Duke Field (Aux Field 3) | Santa Rosa Island (HLZ A-15, A-2, A-3, A-4, A-5, A-6, A-7, A-10, A-11, A-12, A-13, A-15, A-17) |
| Camp Rudder (Aux Field 6 on TA B-6) | Eglin Main Base (Eglin Main, A-19, A-22, A-24, A-28, A-112, A-113) |
| Choctaw/Dillon Field (Aux Field 10) | Hurlburt Field (Aux 9) |
| Auxiliary Field 1 on TA C-5 | Space Surveillance Area (C-6) |
| Auxiliary Field 4 on TA B-2 | Cape San Blas (D-3, D-3A, HLZ) |
| Auxiliary Field 5 on TA B-4 | Eglin Gulf Test and Training Range |
| Elizabeth Drop Zone on TA B-70 (DZ only) | Choctawhatchee Bay (D-54, D-55, D-59) |
| Fort Rucker Recreation Area (TA D-84) | Leased Properties and Special Use Areas |
| Wynn Haven Beach (TA A-85) | |
| LZ East, Rock Hill LZ | |

ALS = Assault Landing Strip; Aux Fld = Auxiliary Field; DZ = Drop Zone; HLZ = Helicopter Landing Zone; LZ = Landing Zone; TA = Test Area

a. B-70 is excluded from the analysis except the paratroop operations conducted on Elizabeth DZ and subsequent ranger training related to the paratroop operations.

The interstitial area primarily supports ground operations and certain aspects of air operations. Air operations over the entire Eglin Military Complex are analyzed in a separate Range environmental assessment (U.S. Air Force, 1998b) and will not be covered here with the exception of zones within the interstitial area that support landing of aircraft and the impacts of chaff and flares that fall on the interstitial area. Ground operations typically include both ground testing and ground training. Ground testing does not typically occur within the interstitial area since testing operations occur exclusively on the test areas. However, any ground tests proposed to occur within the interstitial area would need to be reviewed on an individual per-case basis to determine if a separate environmental analysis is required. Effectors utilized during ground training missions within the interstitial area include troop movement by foot and by vehicle,

bivouac site use, assault zone use, small arms, pyrotechnics, smoke grenades, and chaff and flares. Any activities involving ground disturbance may be reviewed on an individual per-case basis.

1.4 DECISION DESCRIPTION

The 46th Test Wing desires to authorize a new level of activity for the interstitial area, replacing the current authorized level, which is discussed in Section 2.2. A decision is to be made on the *level* of activity to be authorized, which includes changes in mission types, the combination of missions and the level of intensity of missions. By authorizing a new level of activity and analyzing the effects of that level of activity, future similar actions may be categorically excluded from further environmental analysis. This will save both time and money in the review of proposed actions and will enable users to access the Range more quickly and efficiently. Authorization of a new level of activity will streamline the environmental process, enhancing Eglin AFB's ability to quickly respond to high priority or crisis requirements.

1.5 ISSUES

Issues addressed within this document include noise, habitat alteration, chemical materials, direct physical impact, and restricted access/safety, the general categories used to distinguish the potential environmental impacts of alternative actions on interstitial ROI resource areas identified through preliminary investigation.

Specifically, an issue may be the result of a mission activity or land use activity that may directly or indirectly impact physical, biological, and/or cultural environment resources. A *direct* impact is a distinguishable, evident link between an action and the potential impact, whereas an *indirect* impact may occur later in time and/or may result from a direct impact. Resource areas identified for detailed analysis are described in Section 1.5.1, with narratives providing a summary of the preliminary screening for potential impacts.

1.5.1 Resource Areas Identified for Detailed Analysis

Soils

Soils within the interstitial area have the potential to be impacted from military training activities. Analysis addresses the potential for vehicle and foot traffic, establishment of bivouac sites, and use of pyrotechnics to initiate soil erosion or worsen it in areas where erosion is problematic. Analysis also considers the potential for pyrotechnics, munitions, smokes, chaff, and flares to decrease soil quality by introducing new or additional organic and/or inorganic compounds into the soil matrix.

Water Resources

The proposed action has the potential to impact water resources within and around the interstitial ROI. Water resource analysis addresses the potential for impacts to surface waters, wetlands, floodplains, and groundwater from sedimentation and/or contamination by vehicle and foot traffic and chemical materials from ground and air-to-surface operations.

Air Quality

Ground and air-to-surface operations would release emissions from motorized vehicles, aircraft, and munitions. Analysis addresses the expected levels of emissions and compares these levels with what is currently permitted from all Eglin AFB sources and county emissions.

Noise

Noise is defined for the interstitial ROI as the unwanted sound produced by mission training activities. Noise may directly inconvenience and/or stress humans and some wildlife species and may cause hearing loss or damage. Scientific data correlating the effects of noise on humans is well documented; however, information regarding the effects of noise events on wildlife species is limited. The impacts of noise to the public and on wildlife, particularly threatened and endangered species, are a primary concern.

Noise may be produced within the interstitial ROI by training activities involving munitions detonations, the use of gunnery, motorized vehicles, and from low-level aircraft. The environmental consequences analysis strives to evaluate the potential impacts of mission noise events on the public and sensitive wildlife species.

Chemical/Hazardous Materials

Chemical materials encompass liquid, solid, or gaseous substances that are released into the environment as a result of mission activities. These include organic and inorganic materials that can produce a chemical change or toxicological effect to an environmental receptor. For example, the gaseous chemical materials in smokes and the combustion products of small-arms ammunition and pyrotechnics may impact receptors. Solid chemical materials include such items as particulate brass and aluminum in obscurants and lead released from small-arms ammunition.

Additionally, there are several Environmental Restoration Program (ERP) sites located within the interstitial area. Potential impacts to ERP sites and requirements associated with training activities located around these sites are evaluated and discussed.

Solid Waste/Debris

Debris includes the physical materials, analogous to litter, that are deposited on the surface of terrestrial or aquatic environments during the mission activities. This category differs from chemical materials by focusing on the physical disturbances rather than the chemical alterations that could result from the residual materials. Examples of debris deposited from interstitial activities include shell casings, canisters from signal smokes, and cartridges from pyrotechnics, slap flares, barbed wire, concertina wire, and meals-ready-to-eat (MREs). Debris from overland air operations including chaff, flares, and missile debris may land within the interstitial area. Analysis focuses on potential impacts from solid waste/debris as a result of missions within the interstitial area.

Biological Resources

Biological resources may be affected by the Proposed Action. Issues to be examined include potential impacts on wildlife and sensitive species and habitats from troop ground movement and use of pyrotechnics and munitions in the interstitial area. Analysis focuses on identifying sensitive species and habitats within the interstitial area, analyzing the potential for impacts, and establishing management requirements for the avoidance and/or minimization of identified potential impacts.

Land Use

Land use generally refers to human management and use of land. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Analysis focuses on the potential for interference and impacts from multiple land usage activities.

Safety/Restricted Access

Restricted access is typically the result of safety considerations. Safety involves hazards to military personnel and the public resulting from mission activities. Restricted access is a decrease in the availability of Eglin AFB resources to the public resulting from the temporary closure of test areas, interstitial/recreational areas, or public roads because of mission activities. Receptors potentially impacted include the military and the public desiring to use these areas. Guidance for restricted access and safety is utilized to coordinate public and military use of airspace, water space (e.g., the Gulf of Mexico), and land areas within the Eglin AFB ROI. Mission activities that are of potential consequence to restricted access and safety within the interstitial ROI involve the use of low-level aircraft, live munitions detonations and firing, and the need for area closures to nonparticipating personnel due to training exercises.

Socioeconomics

Potential impacts include those that would expose low-income and minority populations to disproportionate negative impacts or pose special risks to children (under 18 years old) associated with noise, pollutant transport, and other conditions in the interstitial area. The socioeconomic receptors include nearby communities and property that are impacted by the noise from Eglin AFB ordnance. Analysis focuses on the exposure of these communities to anticipated environmental effects and identifying whether potential concern areas were disproportionate to other communities in the region.

Cultural Resources

Potential adverse effects to cultural resources would include disturbance or destruction of sites or artifacts. Physical disturbance and/or the destruction of cultural resources could occur from troop and vehicle movements, bivouac/camping site establishment, and the digging of fighting positions. Analysis will focus on cultural site locations and the likelihood of site disturbance and/or destruction.

1.6 FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

An informal Section 7 consultation with the U.S. Fish and Wildlife Service regarding impacts to endangered species is necessary for future interstitial area ground training operations. Consultation with the U.S. Fish and Wildlife Service has been conducted and has established management requirements to minimize impacts to endangered species (Appendix H).

Some components of this action would take place within or otherwise may affect the jurisdictional concerns of the Florida Department of Environmental Protection (FDEP) and therefore requires a consistency determination with respect to Florida's Coastal Zone Management Plan under the Federal Coastal Zone Management Act (CZMA). FDEP will review a U.S. Air Force submitted negative determination (Appendix G).

2. ALTERNATIVES

2.1 INTRODUCTION

This section introduces the alternatives that will be evaluated for potential environmental impacts in this Range environmental assessment for the interstitial area. The proposed alternatives, which are analyzed in this document, are:

- No Action Alternative: Baseline, as defined by the Preferred Alternative in the 1998 Interstitial PEA (U.S. Air Force, 1998a).
- Alternative 1: Authorize Current Level of Activity plus Foreseeable Future Activities.
- Alternative 2 (Preferred Alternative): Alternative 1 with a 300 Percent Mission Surge.

A brief description of each alternative, including the alternative-specific activities and expendables, is provided in the following section.

2.2 ALTERNATIVES CONSIDERED

The alternatives considered for analysis were determined during an interdisciplinary meeting at Eglin AFB, which included representatives from 46 TW/XPX, 96 CEG/CEVSP and 96 CEG/CEVSN. The alternatives chosen were a result of discussions on how foreseeable future activities, such as the 2005 Base Realignment and Closure (BRAC) decision, will expand Eglin AFB's training support requirements in the upcoming years.

The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of training activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative in order to adequately cover the environmental analysis needed to support potential increased training requirements as they occur. There were no alternatives eliminated from detailed analysis.

2.2.1 No Action Alternative

This alternative is defined as authorizing the level of activity approved in the *1998 Interstitial PEA* (U.S. Air Force, 1998a), which authorized a 200 percent increase in mission activity over the baseline level captured in the *Fiscal Year 1995 (FY95) Range Utilization Report* (U.S. Air Force, 1996b) with an additional set of management requirements imposed on interstitial activities. The 200 percent increase applied to all types of interstitial activity, including troop movement on foot, troop movement by vehicle, bivouac use, and assault zone use, as well as the use of ordnance, pyrotechnics, and smokes. Table 2-1 shows the level of activity under the No Action Alternative. Figure 2-1 shows the current training areas utilized by active user groups (note: user groups that no longer conduct training activities are not shown, even though they are listed in Table 2-1).

Table 2-1. No Action Alternative (Previously Approved Level of Activity): Activities and Expendables

| Activity Title | Troop Movement on Foot ¹ | Troop Movement by Vehicle | Bivouac Use ² | | | | Assault Zone Use | | | Ordnance | | | | # Smokes ³ |
|---|-------------------------------------|---------------------------|--------------------------|---|---|---|------------------|----|----|----------------|----------------|--------------|------------|-----------------------|
| | | | A | B | C | D | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | GBS | C-4 | |
| Major User Groups | | | | | | | | | | | | | | |
| U.S. Army Ranger Training | 69,300 | on-road | X | | | | X | X | | 390,000 | 97,500 | 3,900 | | 15 |
| U.S. Navy Land Survival Training ⁴ | 27,000 | on-road | X | | | | | | | | | | | |
| U.S. AFSOC HAVE ACE | 4,680 | on-road | | | | | X | X | | 26,400 | 12,000 | 600 | | 450 |
| USAF AGOS (Air-Ground Operations School) | 11,520 | on-road | | X | | | | X | | 34,050 | 31,200 | | 942 | 2,808 |
| MINOR USER GROUPS | | | | | | | | | | | | | | |
| FLANG 3d Battalion 124th Infantry Training | 2,520 | on-road | X | | | | | | | 8,550 | 21,750 | 147 | | 12 |
| USAF 46 OSS Survival Training | 432 | on-road | | | | | | | | | | | | |
| Advanced Skills Training | 60 | off-road | | | | | | X | X | | | | | 168 |
| U.S. Army School of the Americas Training | 5,040 | on-road | X | | | | X | X | | 7,500 | 4,500 | 75 | | |
| Maryland Army National Guard Training | 3,600 | on-road | X | | | | X | X | | 60,000 | 12,000 | | | 300 |
| U.S. Army Rangers, 10th Mountain Division | 3,150 | on-road | X | | | | X | X | | | | | | |
| U.S. Army 18th Airborne Corp Training | 294 | on-road | X | | | | X | X | | | | | | |
| USAF AFDTA Support of CAP | 960 | on-road | | X | | | | | | | | | | |
| USAF SOC Security Police Training | 960 | on-road | | | | | | | | 3,000 | 1,500 | | | |
| U.S. Marine Corps Medical Battalion Training | | on-road | X | | | | | | | | | | | |
| Florida ANG 653d Signal Company Support | 480 | on-road | | X | | | | | | | | | | |
| 3d Force Reconnaissance Company | 450 | on-road | | X | | | | | | 3,000 | 2,250 | | | 30 |
| U.S. Marine Corps 842nd Signal Company Support | 720 | on-road | | | X | X | | | | 9,000 | 13,500 | 135 | | 45 |
| Michigan Army National Guard Training | | on-road | X | | | | X | X | | | | | | |
| MINOR USER GROUPS - AUXILIARY FIELDS | | | | | | | | | | | | | | |
| USAF 919th Special Operations Wing | 480 | on-road | | | | X | | X | X | 27,000 | | 240 | | 150 |
| USAF Regional Hospital/Eglin | 4,200 | on-road | | | X | X | | | X | 7,500 | | 75 | | 30 |
| USAF 459th Military Airlift Wing Training | 7,200 | on-road | | | | X | | | X | | | | | |
| USAF 908th Airlift Wing Support | 9,000 | on-road | | | X | X | | | X | | | | | |
| Alabama ANG 161st Medical Battalion Training | 900 | on-road | | | | X | | | | | | | | |
| Alabama ANG 226 Combat Communications Group | 6,300 | on-road | | | | X | | | | | | | | |
| U.S. Army 311th Military Intelligence Battalion | 3,150 | on-road | | | | X | | | | | | | | |
| U.S. Army 361st Civil Affairs Brigade Support | 2,700 | on-road | | | X | X | | | | | | | | |
| USAF 727th Air Control Squadron | | on-road | | | | X | | | | | | | | |
| Florida ANG 417th Signal Battalion Training | 2,400 | on-road | | | X | X | | | | | | | | |
| U.S. Navy Project Snapshot | | on-road | | | X | | | | | | | | | |
| TOTAL | 167,496 | | | | | | | | | 576,000 | 196,200 | 5,172 | 942 | 4,038 |

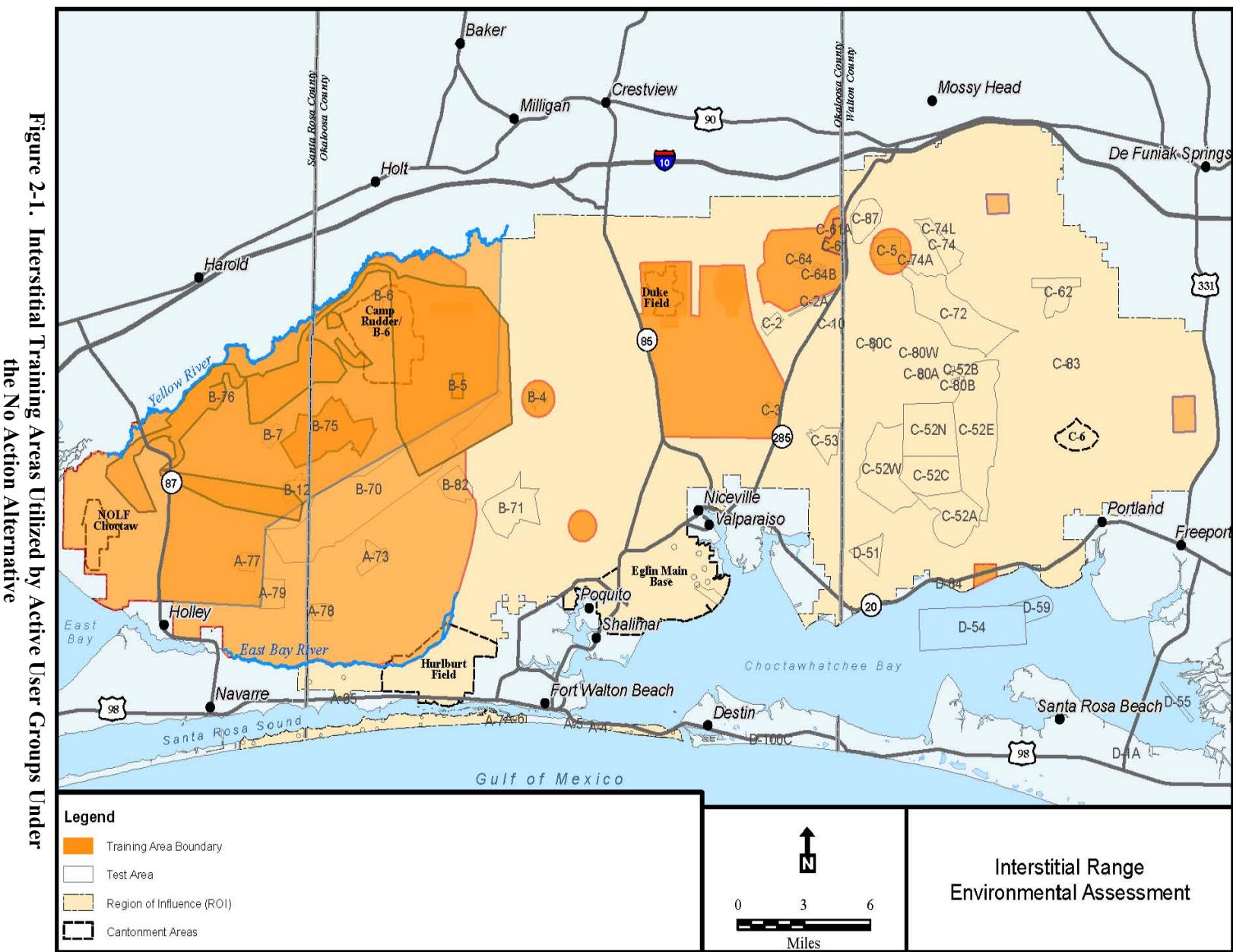
HLZ = Helicopter Landing Zone; DZ = Drop Zone; and LZ = Landing Zone; GBS=Ground Burst Simulator

1. People-days/year = # personnel × # days of the deployment × the number of deployments/year; the maximum number of personnel, days in the field, and deployments per year were used.

2. A = Primitive; B = Non-Primitive; C = Non-established Auxiliary Field; and D = Established Auxiliary Field.

3. M-18 smoke grenades.

4. Navy Land Survival Training no longer at Eglin AFB as of 1 May 1997.



2.2.2 Alternative 1: Authorize Current Level of Activity Plus Foreseeable Future Activities

Alternative 1 would authorize the current level of activity, plus foreseeable future activities. Foreseeable future activities include:

- An increase in the U.S. Army 6th Ranger Training Battalion (6RTB) training.
- Expansion of Alabama Army National Guard (ALARNG) training activities into the interstitial area.
- Ground training activities associated with the establishment of the U.S. Army 7th Special Forces Group (Airborne), or 7SFG(A).

Ground training and maneuvering activities associated with the ALARNG and 7SFG(A) are discussed in Appendix A. Other training components associated with the ALARNG and 7SFG(A), such as the establishment and use of small-arm ranges, are not included in this environmental assessment. These training areas and activities would be permanently established and would not involve troop movement or munitions use outside of the established range areas. Additionally, these activities have been or are currently being analyzed in detail in separate environmental analyses and, therefore, are not included in this environmental assessment. ALARNG activities were analyzed in the *Alabama Army National Guard Implementation of a Portion of the Master Plan for Cobb Training Site Final Environmental Assessment* (U.S. Air Force, 2007a) and 7SFG(A) activities are analyzed in the *Proposed Implementation of the 2005 BRAC Decisions and Related Action at Eglin AFB Draft Environmental Impact Statement*, which was released to the public in March 2008. This alternative would be implemented using existing management actions (Appendix B). Table 2-2 shows the estimated level of activity under Alternative 1 and Figure 2-1 shows the interstitial training areas utilized by current and future user groups.

2.2.3 Alternative 2: Alternative 1 With a 300 Percent Mission Surge Plus Additional Management Actions (Preferred Alternative)

This alternative is defined as authorizing the current level of activity as described under Alternative 1, plus a 300 percent increase in mission activity with additional management actions imposed on interstitial activities. A 300 percent increase would occur for all types of interstitial activity, including troop movement on foot, troop movement by vehicle, bivouac use, and assault zone use, as well as the use of ordnance, pyrotechnics, smokes, chaff, and flares. A 300 percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency. The same areas will be used for training (Figure 2-2), so that acreage of interstitial areas will not increase under Alternative 2; however, the frequency of use will increase. Table 2-3 shows the estimated level of activity under Alternative 2.

Table 2-2. Alternative 1 (Current Level of Activity Plus Foreseeable Future Activities): Activities and Expendables

| Activity Title | Troop Movement on Foot ¹ | Troop Movement by Vehicle ² | Bivouac Use ³ | | | | Assault Zone Use | | | Ordnance ⁴ | | | | | | |
|---|-------------------------------------|--|--------------------------|----------|---|---|------------------|----------|----------|-----------------------|------------------|-------------------|-------------------------|---------------|--------------|--|
| | | | A | B | C | D | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | .50 caliber Blank | Simulators ⁵ | Smokes | Flares | |
| Current User Groups | | | | | | | | | | | | | | | | |
| U.S. Army Ranger Training | | | | | | | | | | 1,182,390 | 369,600 | 0 | 5,556 | 1,276 | 1,350 | |
| Current Training | 21,450 | on/off-road | X | X | | | | | | | | | | | | |
| Foreseeable Future Increase in Training ⁶ | 34,485 | on/off-road | X | X | | | X | X | X | 1,196,250 | 479,600 | 0 | 7,799 | 1,452 | 1,441 | |
| U.S. Army Ranger Training Total | 55,935 | on/off-road | X | X | | | X | X | X | 2,378,640 | 849,200 | 0 | 13,355 | 2,728 | 2,791 | |
| U.S. AFSOC HAVE ACE | 1,560 | on-road | X | | | | | X | X | 56,000 | 28,000 | 0 | 1,400 | 785 | 1,400 | |
| FLANG 3d Battalion 124th Infantry Training | 840 | on-road | X | X | | | | X | | 21,000 | 10,500 | 850 | 49 | 60 | 150 | |
| Advanced Skills Training | 3,200 | ATVs | X | | | | X | X | X | 54,000 | 27,000 | 0 | 250 | 256 | 28 | |
| USAF SOC Security Police Training | 1,500 | on-road | | | X | X | X | | X | 13,080 | 3,000 | 2,000 | 222 | 222 | 98 | |
| USAF 919th Special Operations Wing Readiness Field Training | 1,280 | on-road | | | X | X | X | X | X | 5,000 | 4,000 | 0 | 80 | 50 | 0 | |
| USAF Regional Hospital/Eglin | 1,400 | on-road | | | X | X | X | | X | 0 | 0 | 0 | 0 | 0 | 0 | |
| Civil Air Patrol | 240 | on-road | | | | X | X | | X | 0 | 0 | 0 | 0 | 0 | 0 | |
| Det 1, 334 TS – TAC Tech School | 2,500 | on-road | | X | | | | | | 10,000 | 5,000 | 0 | 400 | 100 | 250 | |
| 720 STGP Joint Training Support | 3,200 | on-road | X | | | X | | X | X | 4,000 | 2,000 | 0 | 0 | 105 | 0 | |
| 728 TCS Scheduling Support | 9,600 | on-road | | | X | | | | | 24,000 | 7,000 | 0 | 0 | 0 | 0 | |
| 96th Ground Combat Training Squadron | -- | on-road | | | | | | | | 42,000 | 12,000 | 0 | 240 | 240 | 0 | |
| Navy Expeditionary Warfare Training (ARG/MEU) ⁷ | 10,000 | on/off-road | | X | X | | X | X | X | 691,620 | 274,096 | 0 | 3,010 | 1,227 | 498 | |
| CURRENT USER TOTAL | 90,005 | | | | | | | | | 3,299,340 | 1,221,796 | 2,850 | 19,006 | 5,773 | 5,215 | |
| Foreseeable Future User Groups | | | | | | | | | | | | | | | | |
| ALARNG Training ⁸ | 82,800 | on/off-road | | | | | | | | 80,000 | 54,000 | 40,000 | 500 | 500 | 500 | |
| 7SFG(A) Training ⁹ | 248,832 ¹⁰ | on/off-road | X | X | X | X | X | X | X | 1,025,280 | 109,440 | 0 | 11,400 | 5,166 | 2,400 | |
| FUTURE USER TOTAL | 331,632 | | | | | | | | | 1,105,280 | 163,440 | 40,000 | 11,900 | 5,666 | 2,900 | |
| GRAND TOTAL | 421,637 | | | | | | | | | 4,404,620 | 1,385,236 | 42,850 | 30,906 | 11,439 | 8,115 | |

HLZ = Helicopter Landing Zone; DZ = Drop Zone; and LZ = Landing Zone

1. People-days/year = # personnel × # days of the deployment × the number of deployments/year; the maximum number of personnel, number of days in the field, and deployments per year were used.

2. The majority of mainland transportation by interstitial users is on established Range roads. Currently, off-road vehicle use, which is either vehicle use on non-numbered Range roads or completely off of any road, is limited to organizations that must use transportation over rough terrain to meet mission requirements.

3. A = No Bivouac; B = Primitive; C = Temporary Tent Complex; and D = Reusable Hardstand.

4. Maximum annual usage from 1995 through 2003 (U.S. Air Force, 2005a) for current user groups only and does not apply to Foreseeable Future Activities for Army Ranger Training or Navy Expeditionary Warfare Training (ARG/MEU).

5. Includes ground burst simulators, artillery simulators, hand grenade simulators, demolition effect simulators, etc.

6. Source: Boone, 2007.

7. Source: Maximum annual usage from 2003 through 2006.

8. Source: U.S. Army, 2007.

9. Sources: U.S. Air Force, 2006a; U.S. Army, 2004.

10. Mobility training based on 72 12-man teams conducting four events per 12-man team at two hours per event annually.

Figure 2-2. User Group Training Areas Under Alternative 1 and Alternative 2

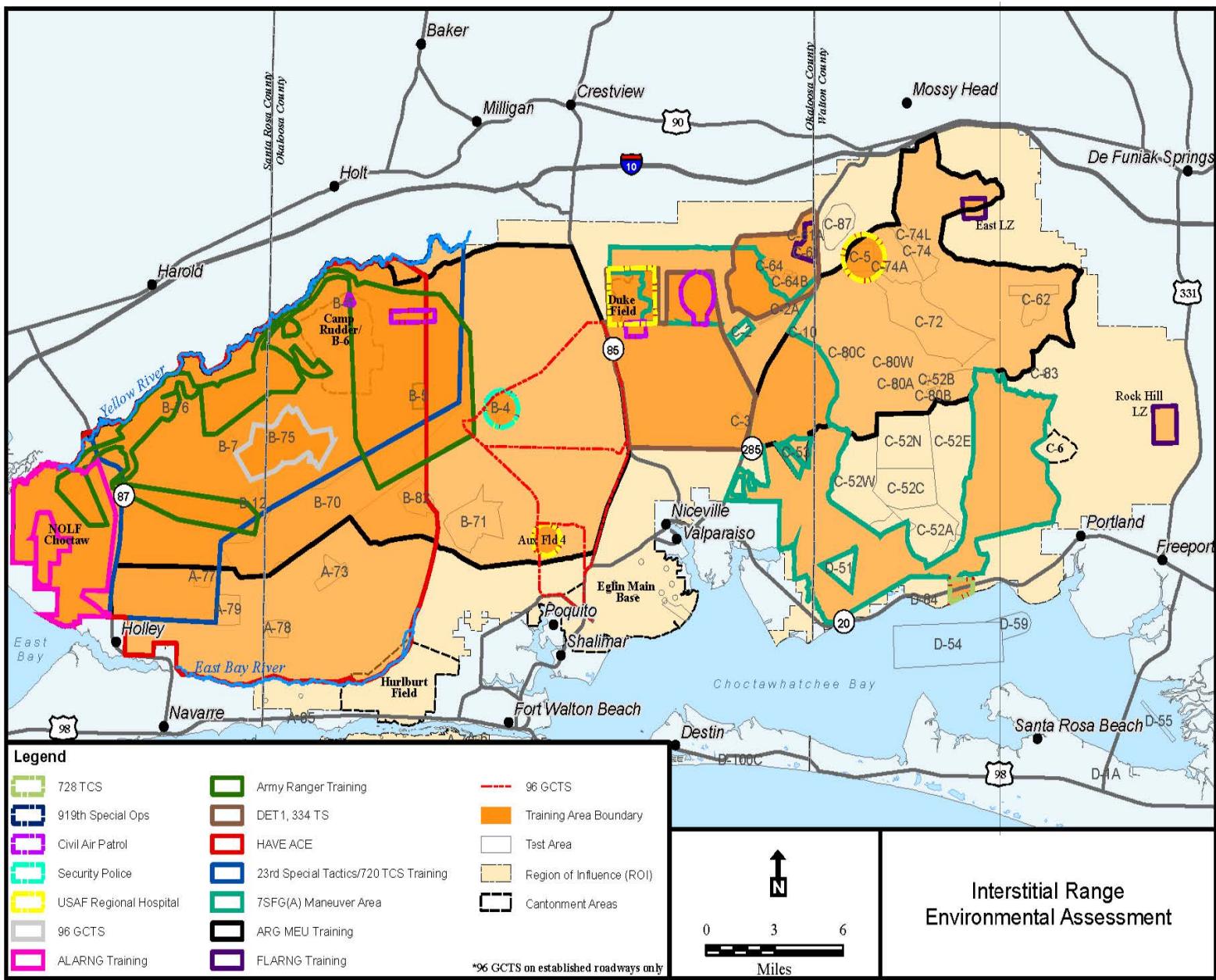


Table 2-3. Alternative 2 (Alternative 1 Plus a 300 Percent Mission Surge): Activities and Expendables

| Activity Title | Troop Movement on Foot ¹ | Troop Movement by Vehicle | Bivouac Use ² | | | | Assault Zone Use ³ | | | Ordnance | | | | | | |
|---|-------------------------------------|----------------------------|--------------------------|---|---|---|-------------------------------|----|----|-------------------|------------------|----------------|-------------------------|---------------|---------------|--|
| | | | A | B | C | D | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | .50 Cal Blank | Simulators ³ | Smokes | Flares | |
| User Groups | | | | | | | | | | | | | | | | |
| U.S. Army Ranger Training | 223,740 | on/off-road | X | X | | | X | X | X | 9,514,560 | 3,396,800 | 0 | 53,420 | 10,912 | 11,164 | |
| U.S. AFSOC HAVE ACE | 6,240 | on-road | X | | | | | X | X | 224,000 | 112,000 | 0 | 5,600 | 3,140 | 5,600 | |
| FLANG 3d Battalion 124th Infantry Training | 3,360 | on-road | X | X | | | | X | | 84,000 | 42,000 | 3,400 | 196 | 240 | 600 | |
| Advanced Skills Training | 12,800 | ATVs | X | | | | X | X | X | 216,000 | 108,000 | 0 | 1,000 | 1,024 | 112 | |
| USAF SOC Security Police Training | 6,000 | on-road | | | X | X | X | | X | 52,320 | 12,000 | 8,000 | 888 | 888 | 392 | |
| USAF 919th Special Operations Wing Readiness Field Training | 5,120 | on-road | | | X | X | X | X | X | 20,000 | 16,000 | 0 | 320 | 200 | 0 | |
| USAF Regional Hospital/Eglin | 5,600 | on-road | | | X | X | X | | X | 0 | 0 | 0 | 0 | 0 | 0 | |
| Civil Air Patrol Search and Rescue Training | 960 | on-road | | | X | X | | X | | 0 | 0 | 0 | 0 | 0 | 0 | |
| Det 1, 334 TS – TAC Tech School | 10,000 | on-road | | X | | | | | | 40,000 | 20,000 | 0 | 1,600 | 400 | 1,000 | |
| 720 STGP Joint Training Support | 12,800 | on-road | X | | X | | | X | X | 16,000 | 8,000 | 0 | 0 | 420 | 0 | |
| 728 TCS Scheduling Support | 38,400 | on-road | | | X | | | | | 96,000 | 28,000 | 0 | 0 | 0 | 0 | |
| 96th Ground Combat Training Squadron | | on-road | | | | | | | | 168,000 | 48,000 | 0 | 960 | 960 | 0 | |
| Navy Expeditionary Warfare Training Sup (ARG/MEU) | 40,000 | | | X | X | | X | X | X | 2,766,480 | 1,096384 | 0 | 12,040 | 4,908 | 1,992 | |
| ALARNG Training | 331,200 | on/off-road (up to 200 ft) | | | | | | | | 320,000 | 216,000 | 160,000 | 2,000 | 2,000 | 2,000 | |
| 7SFG(A) Training | 995,328 | on/off-road | X | X | X | X | X | X | | 4,101,120 | 437,760 | 0 | 45,600 | 20,664 | 9,600 | |
| TOTAL | 1,691,548 | | | | | | | | | 17,618,480 | 5,520,944 | 171,400 | 123,624 | 45,756 | 32,460 | |

HLZ = Helicopter Landing Zone; DZ = Drop Zone; LZ = Landing Zone

1. People-days/year = # personnel × # days of the deployment × the number of deployments/year; the maximum number of personnel, number of days in the field, and deployments per year were used.

2. A = No Bivouac; B = Primitive; C = Temporary Tent Complex; and D = Reusable Hardstand.

3. Includes ground burst simulators, artillery simulators, hand grenade simulators, demolition effect simulators, etc.

The need for additional management actions is driven by legislation, regulations, and policies, which protect sensitive habitats, cultural resources, and threatened and endangered species (Appendix C). Legislation pertaining to sensitive habitats, sensitive species, and exotic species includes the Endangered Species Act; AFI 32-7064, *Integrated Natural Resources Management Plan*; Executive Order (EO) 11990, *Protection of Wetlands*; and EO 13112, *Invasive Species*. Regulations on treatment of threatened and endangered species, many of which are supported in sensitive habitats, will be further described in the Biological Resources section. Several laws and regulations are pertinent to the treatment of cultural resources, such as the National Historic Preservation Act of 1966 (NHPA), as amended; the Archaeological Resources Protection Act of 1979; and AFI 32-7065, *Cultural Resources Management*, which specifies proper procedures for cultural resource management at Eglin AFB.

Alternative 2 is the Preferred Alternative because it provides an authorized level of activity under a potential mission surge of 300 percent. The addition of management actions to Alternative 2 will allow for a surge of activity while maximizing environmental stewardship.

2.3 COMPARISON OF ALTERNATIVES

Potential impacts under each alternative are summarized in Table 2-4.

2.4 PREFERRED ALTERNATIVE

The Preferred Alternative is Alternative 2, which allows a 300 percent increase in interstitial operations over the current level of activity plus foreseeable future activities. Implementation of management actions (Appendix B) will allow a surge in training activities while minimizing impacts to environmental and natural resources. Impacts to soils, water resources, air quality, noise, chemical materials, biological resources, land use, safety, and socioeconomic and cultural resources are considered insignificant under Alternative 3 with the implementation of management actions discussed in Appendix B and in the sections devoted to the particular resources. Long-term and cumulative impacts to the affected environment have not been identified under this alternative.

Table 2-4. Summary of Issues and Potential Impacts Under All Alternatives

| Resource | No Action Alternative | Alternative 1 | Alternative 2 |
|-----------------|---|---|---|
| Soils | <p>Soil impacts as a result of ground movements are not expected to be significant under this alternative; however, management actions such as avoidance of TA D-84 and filling/covering of holes or trenches should be implemented.</p> <p>Under this alternative, effects from munitions and pyrotechnics are not expected to be significant.</p> | <p>With the implementation of management actions detailed in Section 4.2, such as implementation of the ITAM, and implementation of management actions in Appendix B, effects on soils related to ground movements are not expected to be significant.</p> <p>Munitions and pyrotechnics usage increases under this alternative would not pose an ecological concern based on EPA thresholds. Additionally, the management actions in Appendix B would ensure no significant impacts from chemical releases to soils.</p> | <p>Implementation of management actions discussed for Alternative 1 and those outlined in Appendix B would ensure that no significant impacts would occur to soils based on ground movements under this alternative.</p> <p>Under this alternative, munitions and pyrotechnics use would increase 300 percent over Alternative 1. Munitions and pyrotechnics usage increases under this alternative would not pose an ecological concern based on EPA thresholds. Additionally, the management actions in Appendix B would ensure no significant impacts from chemical releases to soils.</p> |
| Water Resources | <p>Under the No Action Alternative, the likelihood of significant effect to groundwater, surface water, wetlands, or floodplains is highly unlikely as a result of any of the activities associated with the No Action Alternative.</p> | <p>Significant effects on water resources as a result of troop movement, assault zone use, or bivouac are not expected, assuming the management actions are implemented.</p> <p>Munitions and pyrotechnic use would increase under this alternative, but effects from lead and perchlorate are not expected to be of concern. This alternative would have an increased potential for surface water effects from the use of smoke grenades.</p> | <p>Significant effects on water resources as a result of troop movement, assault zone use, or bivouac are not expected, assuming the management actions are implemented.</p> <p>Munitions and pyrotechnic use would increase further under this alternative, but effects from lead and perchlorate are not expected to be of concern. This alternative would have an increased potential for surface water effects from the use of smoke grenades.</p> |
| Air Quality | <p>No adverse effects to air quality are expected as a result of the No Action Alternative.</p> | <p>The highest emission would be from the 24-hour particulate matter emission at 0.13 percent of the standard. No air quality impacts are expected for Alternative 1.</p> | <p>Emissions from the interstitial training activities with a 300 percent increase would pose insignificant emissions to the region. No adverse impacts are expected for Alternative 2 to regional air quality.</p> |

Table 2-4 Summary of Issues and Potential Impacts Under All Alternatives, Cont'd

| Resource | No Action Alternative | Alternative 1 | Alternative 2 |
|--------------------|---|---|---|
| Noise | Impacts to people are not expected from minimal vehicle use associated with interstitial missions. Average helicopter noise was found to be low level and would have little effect on human receptors. Impacts to humans and sensitive species are not expected from the No Action Alternative. | <p>There are no known sensitive receptors in the affected acres from 7SFG(A) small-arms noise. Of the large arms impacted acreage, 31 acres that would experience greater than 62 dB CDNL are residential and considered sensitive receptors. This may cause limited to moderate annoyance to residents in these areas. Noise impacts due to 7SFG(A) vehicle operations are not expected. The ALARNG would utilize vehicles and small arms which would cause impulse noise and transportation noise, but impacts from ALARNG training noise are not expected.</p> <p>Limited to moderate annoyance may occur from 7SFG(A) training, other noise impacts are not expected for Alternative 1.</p> | <p>The residents located within the acres affected from the 7SFG(A) activities would experience more frequent elevated noise levels. This may cause moderate annoyance to residents. The ALARNG activities would also increase, but by extending the buffer from 1,000 feet to 3,000 feet, the public along the western edge of the Eglin Range would not be adversely affected by ALARNG training activities.</p> <p>Moderate annoyance may occur to residents affected by the 7SFG(A) large arms activities. With the described management practices, the public would not be adversely impacted by activities in Alternative 2.</p> |
| Chemical Materials | <p>Under the No Action Alternative, there would be no adverse effects to the environment associated with chemical materials as long as debris clearance is continued and no live small-arms munitions are utilized.</p> <p>No new Toxic Release Inventory (TRI) reporting thresholds would be exceeded by munitions expenditures associated with the No Action Alternative.</p> <p>Eglin's Environmental Restoration Branch (96 CEG/CEVR) is consulted regarding potential ground-maneuvering activities taking place in or near Environmental Restoration Program (ERP) sites, so no adverse impacts to ERP sites would occur.</p> | <p>With increased training activities under this alternative, likelihood of debris and dudded ordnance is increased, but with management actions (Appendix B) in place, no significant impacts are anticipated.</p> <p>Because the interstitial training areas are rather large, the overall concentration of any chemical at any given location in the interstitial area would be minute. Additionally, because lead expenditures already require TRI reporting, no new TRI thresholds would be exceeded under Alternative 1.</p> <p>Although frequency of activity would increase under this alternative, 96 CEG/CEVR would be consulted regarding potential ground-maneuvering activities taking place in or near ERP sites, and no adverse impacts to ERP sites would be expected as result of implementation of Alternative 1.</p> | <p>With increased training activities under this alternative, likelihood of debris and dudded ordnance is increased, but with management actions (Appendix B) in place, no significant impacts are anticipated.</p> <p>Because the interstitial training areas are rather large, despite the further increase in munitions expenditures, the overall concentration of any chemical at any given location in the interstitial area would be minute. Additionally, because lead expenditures already require TRI reporting, no new TRI thresholds would be exceeded under Alternative 2.</p> <p>Although frequency of activity would increase further under this alternative, 96 CEG/CEVR would be consulted regarding potential ground-maneuvering activities taking place in or near ERP sites and no adverse impacts to ERP sites would be expected as result of implementing Alternative 2.</p> |

Table 2-4 Summary of Issues and Potential Impacts Under All Alternatives, Cont'd

| Resource | No Action Alternative | Alternative 1 | Alternative 2 |
|----------------------|---|---|---|
| Biological Resources | <p>Ground operations have the potential to harm sensitive habitats, plants, and species. Overall, with the implementation of the management requirements in Appendix B, impacts to sensitive habitats and species from ground operations would not be significant.</p> <p>Negative and beneficial impacts to sensitive habitats and species from wildfires associated with munitions and pyrotechnics use are possible; however, with the implementation of the requirements in Appendix B, overall impacts to biological resources would not be significant. Due to restrictions on where pyrotechnics and munitions can be used, along with required cartridge and debris cleanup (Appendix B), overall impacts to biological resources from chemicals and noise would not be significant. Chemicals are not likely to adversely affect the sensitive species.</p> <p>Given the restriction on ground-disturbing activities in sensitive wet habitats and the 500-ft buffer around HLZs for RCW trees, impacts to biological resources from air operations would not be significant. Air operations are not likely to adversely affect the RCW.</p> | <p>With increased activity, the potential for impacts to sensitive habitats, plants, and species increases as well. However, with the implementation of the management requirements in Appendix B, impacts from ground operations would not be significant.</p> <p>The assumption is made that a four-fold increase in activity would lead to quadruple the number of wildfires, affecting 5,520 acres annually. Negative and beneficial impacts to sensitive habitats and species from wildfires associated with munitions and pyrotechnics use are possible; however, with the implementation of the requirements in Appendix B, overall impacts to biological resources would not be significant.</p> <p>With the observance of developed Army guidelines and implementation of management actions, overall impacts to sensitive species from interstitial munitions noise and chemical materials would not be significant.</p> <p>Given the restriction on ground-disturbing activities in sensitive wet habitats and the 500-ft buffer around HLZs for RCW trees, impacts to biological resources from air operations would not be significant. Air operations are not likely to adversely affect the RCW.</p> | <p>Implementation of the management requirements in Appendix B along with additional management actions such as random post-mission site surveys for disturbance in sensitive areas, and marking of wetland Outstanding Natural Areas and Significant Botanical Sites on field maps as areas to avoid would minimize the potential for damage to sensitive habitats; thus, impacts to sensitive habitats would not be significant.</p> <p>Implementation of the management requirements in Appendix B along with additional management actions outlined in Section 4.7.3 would minimize the potential for negative effects on sensitive species. Ground operations may affect, but are not likely to adversely affect, the RCW, eastern indigo snake, Okaloosa darter, and flatwoods salamander.</p> <p>As discussed for Alternative 1, noise and chemical impacts would not be significant, even with a 300 percent increase. Management requirements mandating munitions/pyrotechnics debris cleanup and restricting activities near RCW trees and wetlands minimize the potential for impacts to sensitive habitats and species (Appendix B).</p> <p>Implementation of the management requirements in Appendix B and additional management actions in Section 4.7.3 would minimize the potential for negative effects to sensitive habitats and species.</p> |

Table 2-4 Summary of Issues and Potential Impacts Under All Alternatives, Cont'd

| Resource | No Action Alternative | Alternative 1 | Alternative 2 |
|-------------------------|---|--|---|
| Land Use and Recreation | <p>Under the No Action Alternative, land use in the interstitial area would remain consistent with current land uses. Military and recreational use would remain the primary uses. Therefore, there would be no significant impact to land use and recreation under the No Action Alternative.</p> | <p>Under Alternative 1, land use would remain consistent with current land uses. Military and recreational use would remain the primary uses. Any additional training may overlap current training and/or recreational areas. In particular, the addition of the 7SFG(A) will result in a conditional closure of approximately 44,020 acres of public access/recreational land and the permanent closure of between 12,689 and 20,676 acres of land, depending on the location selected for the 7SFG(A) Ranges. There will be no adverse impacts to land use, since it would remain compatible with the existing land uses. However, the public may perceive the change as an adverse reduction in the total amount of area open for public access and outdoor recreation within the interstitial area of the Eglin Range.</p> <p>However, military missions are the first priority and take precedence over other land uses such as recreation. Furthermore, to minimize potential impacts to land use and recreation, several management requirements will be employed</p> | <p>Alternative 2 would involve the same level of activity as described under Alternative 1 with a 300 percent increase in mission activity with additional management actions imposed on interstitial activities. The same areas will be used for training so that acreage of interstitial areas will not increase under Alternative 2; however, the frequency of use will increase. Therefore, Alternative 2 would have similar impacts to land use and recreation as those described under Alternative 1.</p> |
| Safety | <p>Military training on Reservation lands is the first priority, and public access for recreation, while considered, is a lower priority. Since access is only impacted on military land, a decrease in recreational access from interstitial activities is not a significant concern.</p> <p>Closures would be coordinated so that no impacts to public safety would occur as a result of training in the interstitial area.</p> | <p>Military training on Reservation lands is the first priority, and public access for recreation, while considered, is a lower priority. Open recreational areas are closed periodically throughout the year. Since access is only impacted on military land, a decrease in recreational access from interstitial activities is not a significant concern.</p> <p>Closures would be coordinated so that no impacts to public safety would occur as a result of training in the interstitial area.</p> | <p>A 300 percent increase in mission activity will not increase the acreage of area restricted to public access if the same training areas during the baseline year are used. However, the frequency and duration of areas used for training and subsequent restriction will increase. Additionally, management actions outlined in Appendix B, such as optimization of training activities to utilize areas already permanently closed to the public, will ensure there are no adverse effects to safety.</p> |

Table 2-4 Summary of Issues and Potential Impacts Under All Alternatives, Cont'd

| Resource | No Action Alternative | Alternative 1 | Alternative 2 |
|-------------------------|--|--|--|
| Socioeconomic Resources | The previously approved level of activity would not have significant impacts to minority/ low-income populations or pose special risks to children. | Noise associated with the interstitial areas (mainly weaponry firing) would not be expected to leave the Eglin Reservation. Other noise generated from activities including low-flying aircraft are expected to be minimal. As a result, special risks to children would not be anticipated under Alternative 1. | Alternative 2 would have similar impacts as described under Alternative 1. An increase in the level of activities would involve additional noise. Since all activities would involve low-level noise activities, disproportionate impacts to minorities and low-income populations would not be anticipated under Alternative 2. Special risks to children would also not be anticipated under Alternative 2. |
| Cultural Resources | Under the No Action Alternative, the level of activity would remain at approved levels. Appendix B presents Cultural Resource Management Actions approved for this current level of training activities. No significant impacts to cultural resources are expected with implementation of associated management actions. | Areas located within 200 meters of fresh water are generally regarded as high probability zones for the presence of cultural resources; therefore, troop movements should be minimized in these areas whenever possible. Vehicle movements should be restricted near water bodies and on steep slopes, which are areas where there is a high potential for archaeological and historic resources. Consultation with 96 CEG/CEVH must be undertaken to prevent adverse effects to cultural resources. All ground-disturbing activities, such as the establishment of fighting positions, should occur only in areas known to be devoid of cultural resources, or in areas cleared by data recovery excavations. | Troop movements should be minimized within 200 meters of fresh water whenever possible. Vehicle movements should be restricted near water bodies and on steep slopes, which are areas where there is a high potential for archaeological and historic resources. Consultation with 96 CEG/CEVH must be undertaken to prevent adverse effects to cultural resources. All ground-disturbing activities, such as the establishment of fighting positions or bivouac, should occur only in areas known to be devoid of cultural resources, or in areas cleared by data recovery excavations. |

This page is intentionally blank.

3. AFFECTED ENVIRONMENT

The affected environment section of this report describes the receptors within the interstitial area that are potentially impacted by training operations. This chapter is organized by the following sections: Soils, Water Resources, Air Quality, Noise, Chemical Materials, Biological Resources, Land Use, Safety, Socioeconomic Resources, and Cultural Resources.

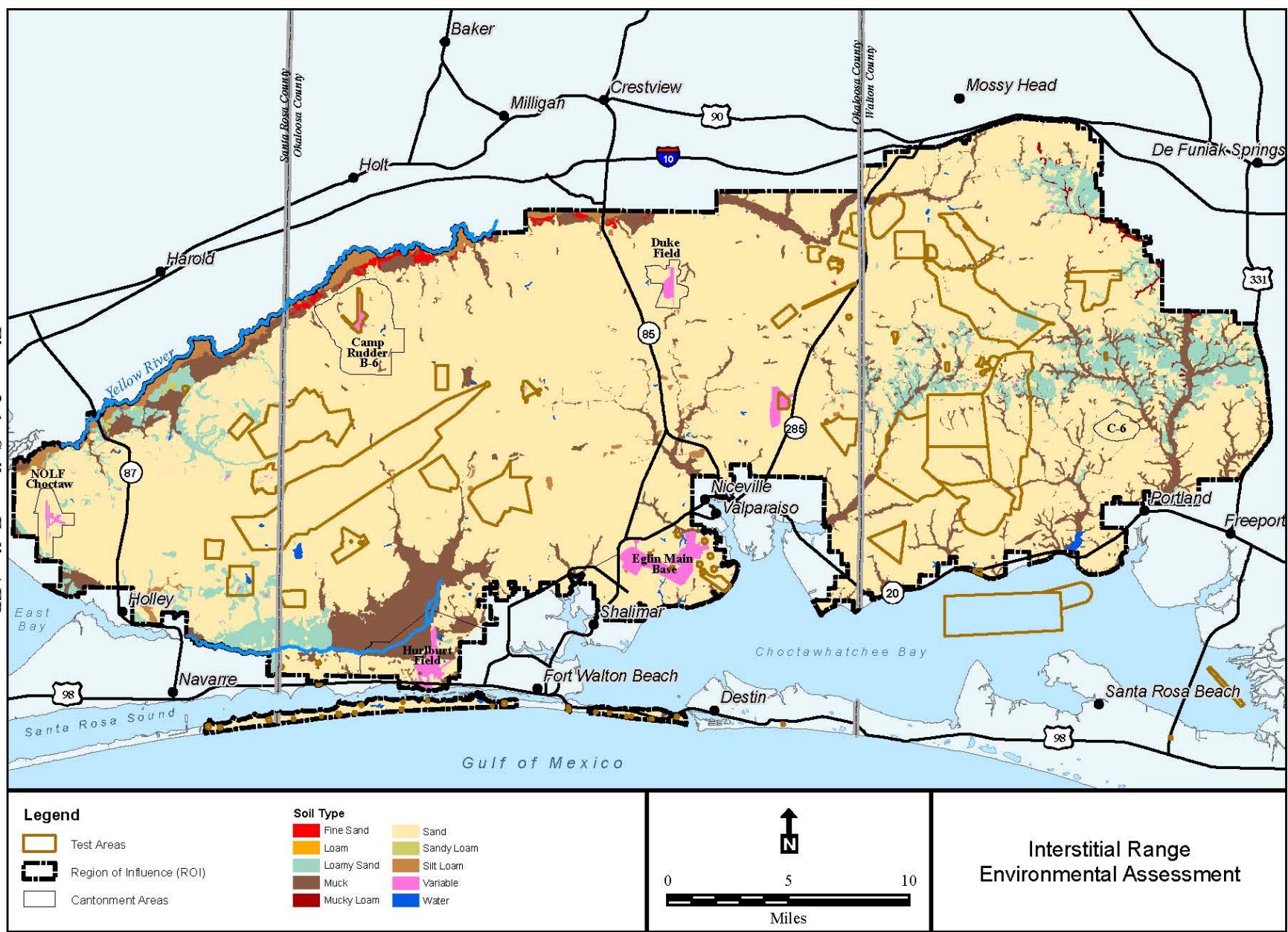
3.1 SOILS

This section provides descriptions of the qualitative and quantitative characteristics of soils in the interstitial areas of Eglin AFB. Eglin Reservation is home to a diversity of soil types with unique physical and chemical characteristics that, combined with a subtropical climate, partly determine the structure and function of these areas' unique ecosystems. The soils within the interstitial area of Eglin AFB can be divided into 56 detailed series according to texture, slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use (U.S. Department of Agriculture, 1995). These soil series are condensed into eight general soil types as shown in Figure 3-1. The most abundant type of soil within the interstitial area is sand, which accounts for over 87 percent of the soils on Eglin. The majority of the area identified as sand is characterized into two different soil series including the Lakeland soil series and the Bonifay-Troup. A more detailed description of the two major soil series is provided below.

The Lakeland soil series is the most prevalent soil in the interstitial area. The series consists of very deep, strongly acidic soils that formed in thick beds of eolian, fluvial, or marine sands on broad uplands in the Lower Coastal Plain (U.S. Department of Agriculture, 1995). The Coastal Plain ranges from nearly flat to very steep uplands. The depth to the seasonal water table is more than 80 inches. All horizons are sand or fine sand with 5 to 10 percent, silt plus clay in the 10- to 40-inch control section. Slopes are dominantly 0 to 12 percent, but range to 85 percent in some areas.

The Bonifay-Troup series consists of deep, somewhat excessively drained soils with thick sandy surface and subsurface layers and loamy subsoils. These formed in nearly level to steep unconsolidated sandy and loamy marine sediments on Coastal Plain uplands (U.S. Department of Agriculture, 1995). Runoff is slow, and permeability is moderate to rapid. Slopes are predominantly 0 to 15 percent but range up to 40 percent. Gravels of quartz and ironstone nodules range up to 10 percent in the slolum (soil mixture of sand with loam). Other soil types occur in varying, smaller percentages within the interstitial area at Eglin.

The main concern for soils in the interstitial area is the potential for erosion. Erosion caused by human activities occurs at rates much greater than erosion caused by natural conditions and has been shown to have detrimental effects on soils and ecosystems. The susceptibility of the soil to erosion is primarily dependent on factors such as soil texture, moisture content, pH, and ionic strength of the eroding water. The probability of erosion generally declines with increases in the amount of clay and organic matter content. In contrast, uniform silts and sands tend to have a higher probability of soil erosion. Slope angle and length are the primary topographic variables influencing rainfall erosion. Vegetation plays a pivotal role in the interception and diffusion of water energy from rain splash and overland water flows.



Areas of the Reservation where woodland management is employed (i.e., lack of clearing and development) have a slight erosion potential for all of the soil series in the interstitial area. The exception to this is the Bonifay-Troup soil series, which even in woodland areas has a slight to moderate erosion potential. Most of the interstitial area is wooded; however, auxiliary fields, LZs, HLZs, and drop zones within the interstitial area are cleared areas. Cleared areas have a higher susceptibility to soil erosion from water and wind. Therefore, areas of the Bonifay-Troup soil series, locations of cleared areas within the interstitial areas (for LZs and DZs), and areas of steep slopes have a higher potential for erosion.

3.2 WATER RESOURCES

3.2.1 Groundwater Resources

Two major aquifers underlie Eglin AFB: the Surficial aquifer, also known as the Sand and Gravel aquifer, and the Floridan aquifer. The Sand and Gravel aquifer is a generally unconfined, near-surface unit separated from the underlying confined Floridan aquifer by the low-permeability Pensacola Clay confining bed. The Sand and Gravel aquifer is mainly composed of clean, fine-to-coarse sand and gravel, while the Floridan aquifer consists of a thick sequence of inter-bedded limestone and dolomite. Water quality of the Sand and Gravel aquifer is generally good, but it is vulnerable to contamination from surface pollutants due to its proximity to the ground surface (U.S. Air Force, 2003).

Water from the Sand and Gravel aquifer is not a primary source of domestic or public water supply on Eglin because of the large quantities of higher quality water available from the underlying upper limestone of the Floridan aquifer (U.S. Air Force, 2003). Water drawn from the upper limestone of the Floridan aquifer is of suitable quality for most uses, and is the primary source of water used at Eglin AFB. The top of the aquifer is about 50 feet below mean sea level (MSL) in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base (McKinnon and Pratt, 1998).

3.2.2 Surface Waters

Surface waters are any waters that lie above groundwater, such as streams, springs, ponds, lakes, rivers, bayous, and bays. Most of the streams in the interstitial area of Eglin are classified as seepage streams or blackwater streams. One spring-fed stream, Blue Spring Creek in Okaloosa County, originates from a deep artesian spring. Seepage streams are clear to lightly colored, and have relatively short, shallow, and narrow water courses. Seepage stream waters originate from shallow groundwater that have percolated through deep, sandy, upland soils. Blackwater streams are steep-banked streams that characteristically have tea-colored waters laden with tannins, particulates, and dissolved organic matter and iron from swamps and marshes that feed into the streams. These streams eventually flow into estuarine drainage areas, such as Rocky, Boggy, Alaqua, and LaGrange Bayous, which drain into the Choctawhatchee Bay.

More detailed descriptions of the different aquatic systems found on Eglin are located in the *Eglin Environmental Baseline Survey Resource Appendices* (U.S. Air Force, 2003). Surface waters on Eglin can be found on Figure 3-2.



Figure 3-2. Water Resources on Eglin AFB

The State of Florida has developed and retains jurisdiction for surface water quality standards for all waters of the state in accordance with the provisions of the Clean Water Act (CWA). Section 303 of the CWA requires the state to establish water quality standards for waterways, identify those that fail to meet the standards, and take action to clean up these waterways. Florida recently adopted the Impaired Waters Rule (IWR) (FAC Chapter 62-303), with amendments, as the new methodology for assessing the state's waters for 303(d) listing. The FDEP submits names of surface waters that are determined to be impaired, using the methodology in the IWR and adopted by secretarial order, to the USEPA for approval as Florida's 303(d) list. The FDEP submits updates to Florida's 303(d) *List of Impaired Surface Waters* to the USEPA every two years. The *2006 Integrated Water Quality Assessment for Florida: 2006 305(b) Report and 303(d) List Update* (FDEP, 2006a) satisfies the listing and reporting requirements of Sections 303(d) and 305(b) of the CWA.

The FDEP divides river basins across Florida into groups, which the FDEP addresses according to an established rotation schedule. The eastern portion of Eglin AFB drains into the Choctawhatchee-St. Andrews Bay Basin (Group 3) and the west side drains into the Pensacola Bay Basin (Group 4) (FDEP, 2006a). Surface waters on Eglin AFB are Class III waters, meaning that they are designated for "recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife" (FDEP, 2006a). Impaired waters on or adjacent to Eglin AFB include: Boggy Bayou, Poquito Bayou, Rocky Bayou State Park, Choctawhatchee Bay, East Bay, and Yellow River (Figure 3-3) (FDEP, 2006b and FDEP, 2007). The existing condition of basins where interstitial area activity occurs are shown in Table 3-1 below. Units train within the land areas that drain into the surface waters listed as receiving water bodies in Table 3-1. The land areas of the interstitial area that drain into the basins listed in the table constitute a small fraction of the total land area that drains into the receiving waters. For example, the Yellow River drains areas from Florida and Alabama that total 1,365 square miles (FDEP, 2007). Industry, agriculture and waste processing in these areas are major contributors of water runoff and effluent components to the receiving water bodies. There is no clear association between the status of the basins and the interstitial area activities.

3.2.3 Wetlands

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water (USFWS, 1979). Abiotic and biotic environmental factors such as morphology, hydrology, water chemistry, soil characteristics, and vegetation contribute to the diversity of wetland community types. The term *wetlands* describes marshes, swamps, bogs, and similar areas. Local hydrology and soil saturation largely affect soil formation and development, as well as the plant and animal communities found in wetland areas (USEPA, 1995). Wetlands are often categorized by water patterns (the frequency or duration of flooding) and location in relation to upland areas and water bodies. Wetland hydrology is considered one of the most important factors in establishing and maintaining wetland processes (Mitsch and Gosselink, 2000).

Figure 3-3. Impaired Waters on or Adjacent to Eglin AFB
Final Interstitial Area Range Environmental Assessment, Revision 1
Eglin Air Force Base, Florida

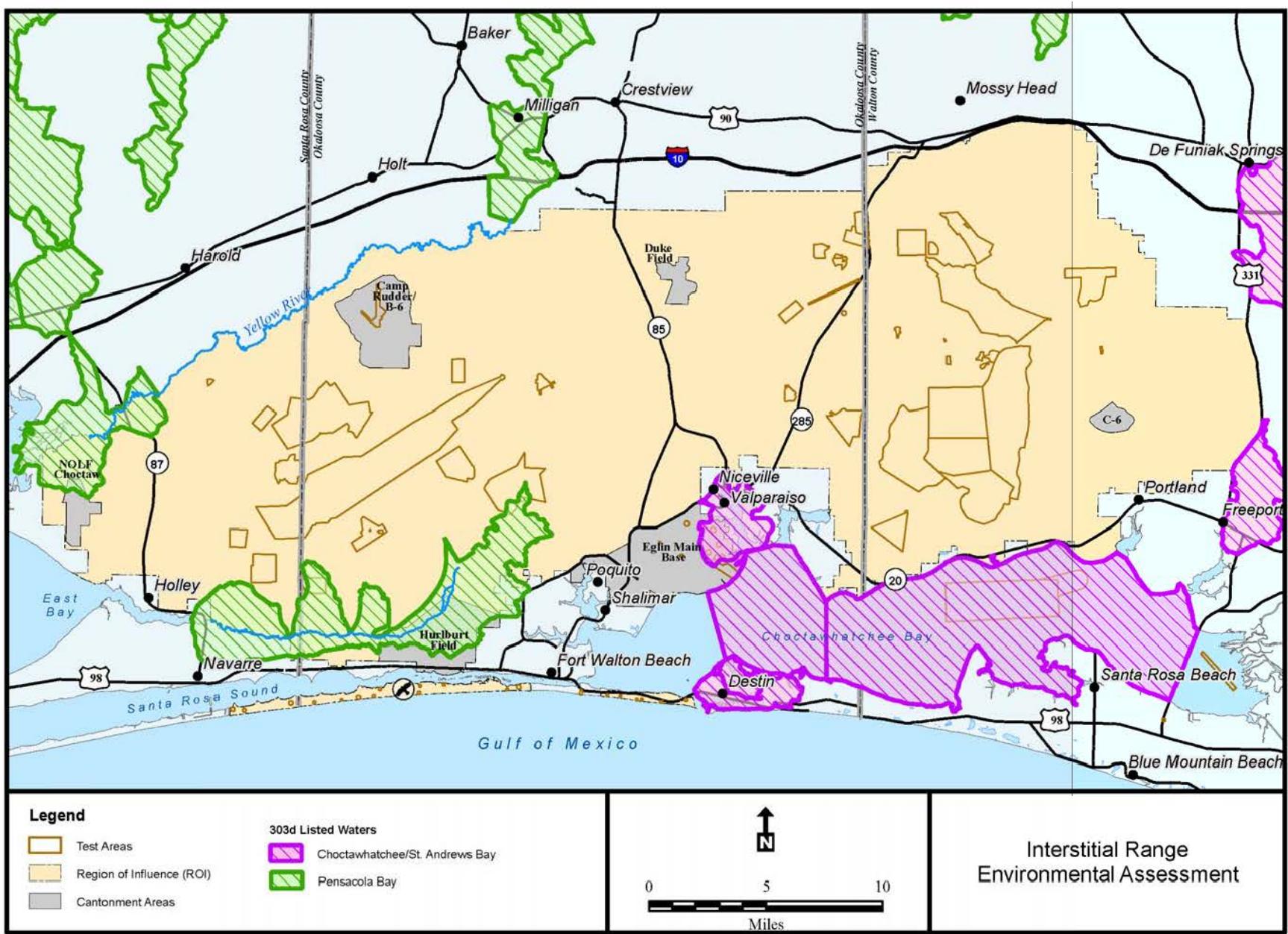


Table 3-1. Existing Condition of FDEP Planning Unit Basins Within the Interstitial Area

| FDEP Planning Unit Name | Basin ID(s) | Status | Receiving Water Body | Basin Used By |
|-------------------------|---|--|---|--|
| Yellow River | 30A | Potentially impaired due to mercury in fish, and iron | Yellow River | ALARNG |
| | 30B | Potentially impaired due to mercury in fish, and iron | Yellow River | Army Rangers, 23STS, HAVE ACE, ARG/MEU |
| | 30C | Potentially impaired due to mercury in fish | Yellow River | Army Rangers, 23STS, HAVE ACE, ARG/MEU |
| Pensacola Bay | 701 | Potentially impaired due to conductance and dissolved oxygen | East Bay River | HAVE ACE |
| Choctawhatchee Bay | 387, 413 | Attaining some uses as determined by biological indices but lacking data to confirm if remaining uses are attained | Mt. Sinai Branch, Exline Creek | ARG/MEU |
| | 318 | No or not enough data to determine if uses are attained. | Bullhide Creek | FLARNG |
| | 339 | No or not enough data to determine if uses are attained. | Lookout Creek | FLARNG |
| | 468, 471, 476, 351A, 492, 515, 590, 612 | No or not enough data to determine if uses are attained. | Anderson Branch, Tenmile Creek, Little Rocky Creek, Ninemile Creek, Pinelog Creek, Little Basin Creek, Long Creek | 7SFG(A) |
| | 472, 587 | No or not enough data to determine if uses are attained. | Parrish Creek, Rogue Creek | ARG/MEU |

Source: FDEP, 2004

“*Jurisdictional wetlands*” are those over which the U.S. Army Corps of Engineers (USACE) has regulatory control under Section 404 of the Clean Water Act. Wetlands are defined in the USACE *Wetlands Delineation Manual* as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE, 1987). The majority of jurisdictional wetlands in the United States are described using the three wetland delineation criteria: hydrophytic vegetation, hydric soils, and hydrology (USACE, 1987). USFWS uses a simpler classification system that is satisfied by any one of the above three characteristics.

USACE is the lead agency in protecting wetland resources. This agency maintains jurisdiction over federal wetlands (33 Code of Federal Regulations [CFR] 328.3) under Section 404 of the CWA (30 CFR 330) and Section 10 of the Rivers and Harbors Act (30 CFR 329). The USEPA assists USACE (in an administrative capacity) in the protection of wetlands (40 CFR 225.1 to 233.71). The State of Florida regulates wetlands under the Wetlands/Environmental Resource

Permit program under Part IV, Florida Statutes Section 373. EO 11990, *Protection of Wetlands*, offers additional protection to these resources. In addition, the USFWS and the National Marine Fisheries Service have important advisory roles. The FDEP's Chapter 62-312, *Dredge and Fill Program*, affords regulatory protection to wetland resources (i.e., protection from excavating or filling a wetlands area with dirt, rip-rap, etc.) at the state level. FDEP issues a Section 401 certification under the authority of the CWA (40 CFR 230.10[b]). Section 401 of the CWA requires federal agencies to obtain certification from the state before issuing permits that would result in increased pollutant loads to a waterbody. The certification is issued only if such increased loads would not cause or contribute to exceedances of water quality standards (USEPA, 2006).

In total, the interstitial areas of Eglin AFB support an average of 63,863 acres of jurisdictional wetlands (dependent on seasonal fluctuations), which is approximately 14 percent of the total interstitial land area (U.S. Air Force, 2005a). These areas include floodplain forest, floodplain swamp, bottomland forest, wet prairie, hydric hammock, blackwater stream, seepage streams, seepage slopes, marsh lake, and bogs (U.S. Air Force, 2003). These systems help to promote regional biodiversity, improve water quality, and provide floodwater storage.

3.2.4 Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers), where flooding events periodically cover flat areas with water. Floodplain vegetation and soils act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers, and stores floodwaters during flood events. This filtration process aids in the removal of excess nutrients, pollutants, and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Conversely, if soils and sediments are contaminated, these contaminants can then be deposited on floodplains. Floodplains on Eglin AFB are depicted in Figure 3-2.

Federal agencies must evaluate any proposed activity to determine whether it would occur within a floodplain. Agencies must address those areas that have a 1 percent chance of floodwater inundation in a given year (also known as a 100-year floodplain). EO 11988, *Floodplain Management*, requires federal agencies to avoid adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development whenever possible. Parts of the floodplain that are also wetlands receive further protection under USACE's Section 404 Permit Program.

3.3 AIR QUALITY

Identifying the affected area for an air quality assessment requires knowledge of sources of air emissions, pollutant types, emissions rates and release parameters, proximity to other emissions sources, and local as well as regional meteorological conditions. Refer to Appendix F, Air Quality, for a review of air quality and associated methodologies used for emissions calculations.

3.3.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. Further discussion of the NAAQS and state air quality standards are included in Appendix F, Air Quality.

Based on measured ambient air pollutant concentrations, the USEPA designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those that are not compliant are known as "nonattainment." Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise.

3.3.2 Existing Conditions

Regional Air Quality

The FDEP operates air quality monitors in various counties throughout the state (FDEP, 2004). Although there are no ambient monitors in Okaloosa County, there are monitors in neighboring Santa Rosa and Bay Counties. Both of these counties are classified as attainment areas, as all counties within Florida are classified as attainment areas for the NAAQS (USEPA, 2007).

Baseline Emissions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources, define the type and size of the sources, characterize emissions from each source, and estimate total mass emissions generated over a period of time, normally a year. These annual rates are typically represented in tons per year. Inventory data establishes relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as the necessity of air regulations. Accurate inventories are imperative for the development of appropriate air quality regulatory policy.

The most recent air emissions inventories for Eglin AFB quantify emissions from stationary and mobile sources based on calendar year activities. Stationary sources include equipment/processes such as boilers, electric generators, surface coating, and fuels handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

For comparison purposes, Table 3-2 presents the USEPA's 2002 National Emissions Inventory (NEI) data for Okaloosa, Santa Rosa, and Walton Counties (USEPA, 2002). The county data includes emissions data from point sources, area sources, and mobile sources. *Point sources* are stationary sources that can be identified by name and location. *Area sources* are point sources whose emissions are too small to track individually, such as a home or small office building; or a diffuse stationary source, such as wildfires or agricultural tilling. A *mobile source* is any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and non-road. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2005).

Table 3-2. Baseline Emissions Inventory for Okaloosa, Santa Rosa, and Walton Counties

| Source Type | Emissions (tons/year) | | | | |
|----------------------------|-----------------------|-----------------|------------------|-----------------|---------------|
| | CO | NO _x | PM ₁₀ | SO _x | VOCs |
| Okaloosa County | | | | | |
| Area sources | 1,867 | 281 | 8,397 | 462 | 4,527 |
| Non-road mobile | 16,150 | 1,099 | 162 | 109 | 1,897 |
| On-road mobile | 45,228 | 5,703 | 153 | 256 | 3,829 |
| Point sources | 28 | 49 | 24 | 12 | 79 |
| Total | 63,274 | 7,132 | 8,736 | 839 | 10,333 |
| Santa Rosa County | | | | | |
| Area sources | 2,142 | 233 | 13,265 | 323 | 3,291 |
| Non-road mobile | 9,806 | 950 | 120 | 89 | 1,524 |
| On-road mobile | 40,237 | 5,341 | 147 | 238 | 3,286 |
| Point sources | 867 | 4,570 | 776 | 2,362 | 418 |
| Total | 53,052 | 11,095 | 14,308 | 3,012 | 8,519 |
| Walton County | | | | | |
| Area sources | 1,060 | 77 | 7,381 | 21 | 1,515 |
| Non-road mobile | 8,892 | 741 | 208 | 67 | 1,675 |
| On-road mobile | 23,915 | 3,849 | 190 | 153 | 1,671 |
| Point sources | 25 | 14 | 6 | 4 | 28 |
| Total | 33,893 | 4,681 | 7,785 | 246 | 4,890 |
| Region of Influence | | | | | |
| Area sources | 5,069 | 591 | 29,042 | 805 | 9,333 |
| Non-road mobile | 34,849 | 2,790 | 491 | 266 | 5,097 |
| On-road mobile | 109,380 | 14,894 | 490 | 648 | 8,787 |
| Point sources | 921 | 4,633 | 806 | 2,378 | 526 |
| Total | 150,219 | 22,909 | 30,829 | 4,097 | 23,742 |

Source: USEPA, 2002

CO = carbon monoxide; SO_x = sulfur oxides; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter of less than or equal to 10 microns; VOC = volatile organic compound

For the analysis of the Proposed Action and alternatives, a threshold of individual pollutant emissions not exceeding 10 percent of the total Santa Rosa, Okaloosa, and Walton County emissions for each pollutant has been selected (Shipley Associates, 1995). Emissions associated with munitions usage and mobile source activities are the main issues generated by training activities in the interstitial areas and will be the focus of the air analysis in Section 4.4, Air Quality.

3.4 NOISE

3.4.1 Definition of the Resource

Noise is defined as any unwanted sound. Defining characteristics of noise include sound level (amplitude), frequency (pitch), and duration. Each of these characteristics plays a role in determining the intrusiveness and level of impact of the noise on a noise receptor. The term “*noise receptor*” is used in this document to mean any person, animal, or object that hears or is affected by noise.

Sound levels are recorded on a logarithmic decibel (dB) scale, reflecting the relative way in which the ear perceives differences in sound energy levels. A sound level that is 10 dB higher than another would normally be perceived as twice as loud while a sound level that is 20 dB

higher than another would be perceived as four times as loud. Under laboratory conditions, the healthy human ear can detect a change in sound level as small as 1 dB. Under most nonlaboratory conditions, the typical human ear can detect changes of about 3 dB.

Sound measurement may be further refined through the use of frequency “weighting.” The normal human ear can detect sounds that range in frequency from about 20 hertz (Hz) to 20,000 Hz (Federal Interagency Committee on Noise [FICON], 1992). However, all sounds throughout this range are not heard equally well. In “A-weighted” measurements, the frequencies in the 1,000 to 4,000 Hz range are emphasized because these are the frequencies heard best by the human ear. Sound level measurements weighted in this way are termed *A-weighted decibels* (dBA). In the case of sonic booms, blast noise, and other impulsive “booming” noises, sound is felt as well as heard. With these types of noise, overpressure may be considered more annoying than the sound itself. For this reason, impulsive sounds are measured using “C-weighting,” which does not attenuate the lower frequencies to the extent that A-weighting does. Sound level measurements weighted in this way are termed *C-weighted decibels* (dBC). Unless otherwise noted, all sound levels referenced in this document can be assumed to be A-weighted.

Typically, the sound level at any given location changes constantly; for example, the sound level changes continuously when an aircraft flies by, starting at the ambient (background) level, increasing to a maximum when the aircraft passes closest to the receptor, and then decreasing to ambient levels when the aircraft flies into the distance. The term *Maximum Sound Level*, or “L_{max}” represents the sound level at the instant during an aircraft overflight when sound is at its maximum.

Because munitions noise levels are so strongly influenced by meteorological conditions (e.g., winds), the peak noise level reaching a particular location after a particular noise event may vary significantly. The metric “Peak Noise Exceeded by 15 Percent of Firing Events” (PK 15[met]) accounts for weather-influenced statistical variation in received single-event peak noise levels. PK 15(met) is the peak noise level, without frequency weighting, expected to be exceeded by 15 percent of all firing events. Because this value is based on probability and actual noise levels would vary higher and lower, it cannot be directly measured in the field. If multiple weapon types are fired from one location, or from multiple firing locations, the reported PK 15(met) level would be based on the loudest weapon type at the closest location. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommends this metric as a supplement to time-averaged noise levels when discussing impulsive noise (USACHPPM, 2005).

3.4.2 Sound Metrics

Because both the duration and frequency of noise events also play a role in determining overall noise impact, several metrics are used that account for these factors. Each metric discussed below is used in the assessment of noise impacts in this document.

- Day-Night Average Sound Level (DNL) represents aircraft noise level averaged over a 24-hour period with a 10 dB penalty to flights occurring between 10:00 P.M. and 7:00 A.M. to account for the added intrusiveness of noise during these hours. It is important to recognize that the DNL metric does not represent the noise heard at any single point in time, but rather a weighted average of noise levels that occur over the course of a day. The DNL metric has been endorsed by several federal agencies as being

the best descriptor of general noise conditions in the vicinity of airfields (USEPA, 1974; Federal Interagency Committee on Urban Noise [FICUN], 1980).

- C-Weighted Day-Night Sound Level (CDNL) is day-night sound levels computed for areas subject to sonic booms and blasts from high explosives. Use of the C-weighted scale accounts for the dominance of low-frequency components of these types of sounds.

3.4.3 Effects of Noise

Annoyance, speech interference, sleep interference, human health impacts, structural damage, and wildlife impacts have all been associated with noise.

Annoyance is the most common effect of aircraft noise on humans. Aircraft noise often interferes with activities such as conversation, watching television, using a telephone, listening to the radio, and sleeping. This interference often contributes to individuals becoming annoyed. Whether or not an individual becomes annoyed by a particular noise is highly dependent on emotional and situational variables of the listener as well as the physical properties of the noise (Federal Aviation Administration [FAA], 1985). However, when assessed over long periods of time and with large groups of people, a strong correlation exists between the percentage of people highly annoyed by noise and the time-averaged noise exposure level in an area (Schultz, 1978; Finegold et al., 1994). This finding is based on surveys of groups of people exposed to various intensities of transportation noise. A generalized categorization of noise-induced annoyance can be found in Table 3-3. As discussed earlier in this section, DNL (A-weighted) is used to assess noise for which audible sound is the major concern (e.g., subsonic aircraft noise, small-arms fire). CDNL (C-weighted) is used to assess noise in which vibration and low-frequency components are a major concern (e.g., sonic booms, high-explosive munitions noise).

Table 3-3. Relationship Between Noise Level and Percent of Population Highly Annoyed

| Criteria | Percent of Population Highly Annoyed | | |
|--|--------------------------------------|-----------|---------|
| | < 15% | 15%–39% | >39% |
| | Noise Level | | |
| A-weighted average noise levels (continuous noise) | < 65 dB | 65–75 dB | > 75 dB |
| C-weighted average noise levels (impulsive noise) | < 62 dBC | 62–70 dBC | >70 dBC |
| Unweighted peak noise levels (small-arms noise) | < 87 dB | 87–104 dB | >104 dB |

Source: USACHPPM, 2005;

< = less than; > = greater than; dB = decibels; dBC = C-weighted decibels

Note: The primary noise metric used by the U.S. Army to describe small-arms noise is PK 15(met)

To protect public health with an adequate margin of safety, the USEPA recommends that exterior noise levels should not exceed 55 dB DNL and interior noise levels should not exceed 45 dB DNL in noise-sensitive locations (USEPA, 1974). FICUN took these recommendations into consideration when developing its recommendations on compatibility of land uses with noise (FICUN, 1980). These recommendations have been adopted, with minor modifications, by the DoD (DoD Instruction 4165.57).

3.4.4 Existing Conditions

The interstitial area of the Eglin Range is used by a number of user groups for various purposes. Eglin AFB is an active base; thus aircraft, explosives, and small-arms firing noise are typical noises. In the interstitial area, ambient noise levels are largely natural sounds from birds and

wind punctuated by passing aircraft, bombs, or munitions noise on nearby test areas, and some on- and off-road vehicle traffic within the interstitial areas.

No residential areas are located near the activity sites; however, there is potential to impact sensitive species, mainly the red-cockaded woodpecker (RCW), which is discussed in Section 3.6, Biological Resources.

3.5 CHEMICAL MATERIALS

Chemical materials encompass liquid, solid, or gaseous substances that are released to the environment as a result of mission activities. These would include munitions and pyrotechnic combustion byproducts from items such as smokes and flares. Release of these materials may potentially affect air quality, water quality, soils, and sediments. The environmental analysis of chemical materials describes the potentially adverse environmental impacts from testing and training activities within the interstitial area.

3.5.1 Hazardous Materials

According to the Resource Conservation and Recovery Act (RCRA), Section 6903(5), *hazardous materials and waste* are defined as substances that, because of “quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to increases in mortality or serious illnesses, or pose a substantial threat to human health or the environment.” Hazardous materials as referenced here pertain to mission-related hazardous chemicals or substances meeting the requirements found in 40 CFR 261.21.24, are regulated under the RCRA, and are guided by AFI 32-7042. The hazardous materials to be transported, stored, and used on-site for the Proposed Action consist of fuels, munitions, and pyrotechnics.

Eglin AFB has implemented a *Hazardous Waste Management Plan*, Air Armament Center (AAC) Instruction 32-7003, that identifies hazardous waste generation areas and addresses the proper packaging, labeling, storage, and handling of hazardous wastes. The plan also addresses record keeping; spill contingency and response requirements; and education and training of appropriate personnel in the hazards, safe handling, and transportation of these materials (U.S. Air Force, 2006c). Procedures and responsibilities for responding to a hazardous waste spill or other incident are also described in the Eglin AFB *Spill Prevention, Control, and Countermeasures (SPCC) Plan* (U.S. Air Force, 2005c).

Releases to the environment from munitions utilized in proficiency and qualification training require reporting to the USEPA under the EPCRA Toxic Release Inventory (TRI) program. Training is subject to a TRI reporting threshold of 10,000 pounds per year for most common chemicals, with lower reporting thresholds for chemicals classified as persistent bioaccumulative toxic (PBT). These chemicals include mercury, with a reporting threshold of 10 pounds, and lead, with a threshold of 100 pounds. In cases when a threshold is exceeded, the installation must report on a “Form R” report to the USEPA the quantity of munitions-related waste released to the environment or recovered and recycled.

Eglin AFB has procedures to comply with TRI reporting requirements and would track ordnance use associated with the proposed alternatives. This could require new procedures if proposed

training activities would result in reporting thresholds being exceeded at the base for any new chemicals.

Regulations

Under federal law, the transportation of hazardous materials is regulated in accordance with the Hazardous Materials Transportation Act, 49 U.S. Code (USC) 1801 et seq. For the transportation of hazardous materials, Florida has adopted federal regulations that implement the Hazardous Materials Transportation Act, found at 49 CFR 178.

State laws pertaining to hazardous materials management include the Florida Right-to-Know Act, Florida Statutes Title 17, Chapter 252, the Hazardous Waste section of the Florida Department of Environmental Protection and the Florida Department of Transportation (FDOT) Motor Carrier Compliance Department that implements 49 CFR 178 under Florida statute annotated Title 29 Section 403.721.

AFI 32-7086 Supplement 1, *Hazardous Materials Management*, describes how Eglin complies with federal, state, Air Force and DoD laws and instructions. All Eglin AFB organizations and tenants are required to follow this plan.

3.5.2 Debris

Debris includes the physical materials that are deposited on the surface of terrestrial or aquatic environments during mission activities. The potential impacts are primarily related to physical disturbances to people, wildlife, or other users of the Range, and chemical alterations that could result from the residual materials. Examples of debris deposited from activities in the interstitial area that may potentially result in environmental impacts include the following:

- Shell casings, canisters from signal smokes, flares, chutes from flares
- Unexploded ordnance (UXO) (primarily inert items)
- Litter and refuse from daily mission activities including ground troop movement

3.5.3 Environmental Restoration Program and Legacy Debris Pits

The Environmental Restoration Program (ERP), formerly known as the Installation Restoration Program (IRP), is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations. Although widely accepted at one time, the procedures followed for managing and disposing of wastes resulted in contamination of the environment. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites. Regulations affecting ERP management at Eglin integrate investigative and remedial protocols of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA processes, as well as state environmental compliance programs, primarily those found in the FAC 62-770, Petroleum Contamination Site Cleanup Criteria.

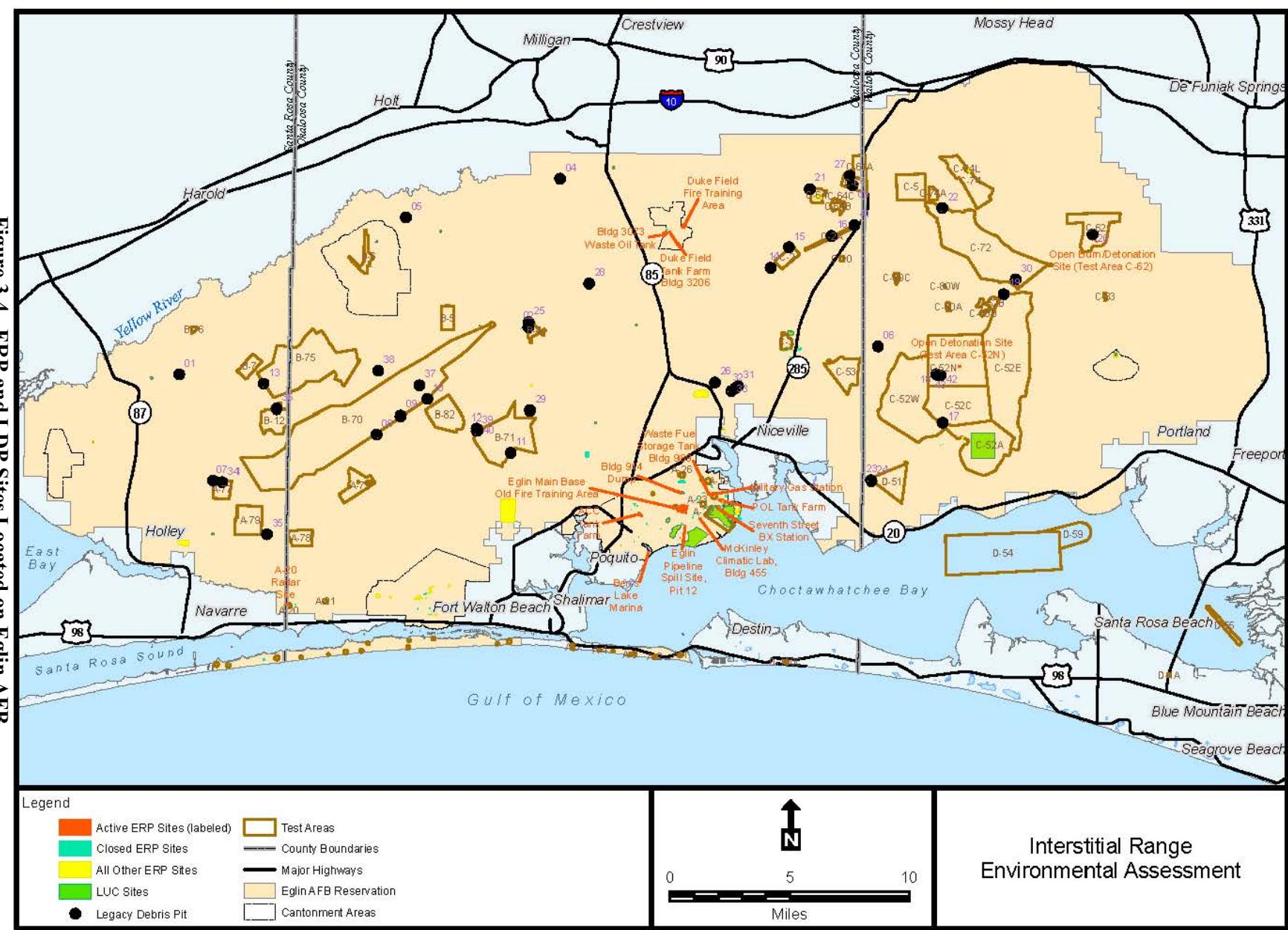
Several ERP site locations are within the ROI of the interstitial area. These site locations are shown in Figure 3-4. Active ERP sites located within the interstitial area ROI are listed in Table 3-4. Details for active ERP sites are provided in Appendix E, Environmental Restoration Program and Legacy Debris Pit Sites. Detailed information on all active and closed ERP sites

can be found in the *Eglin Air Force Base Environmental Restoration Program Sites Status Report* (U.S. Air Force, 2007b).

Table 3-4. Active ERP Sites Located within the Interstitial Area ROI

| SITE ID | SITE STATUS | SITE TITLE | LOCATION |
|---------|----------------------------|--|---|
| DP-09 | LUC | Mullet Creek Drum Disposal Area | Just south of SR 218 past the C-52 Range Gate and 0.6 mile east of Mullet Creek Fork |
| OT-83 | LUC | Cattle Dipping Vat - Pocosin Pond | Reservation |
| OT-89 | LUC – Long Term Management | Eglin Golf Course Maintenance Facility | Valparaiso, 0.5 miles north of John C. Sims Parkway on Highway 85 |
| OT-100 | LUC | Cattle Dipping Vat – Shoal River | Reservation, just south of the Shoal River |
| OT-262 | LUC | Cattle Dipping Vat - Auxiliary Field No. 4 | North of Aux. Field 4 on Eglin Reservation |
| OT-263 | LUC | Cattle Dipping Vat – Kepner Pond | Reservation, 1.5 miles east of Auxiliary Field No. 4 and 1 mile west of Kepner Pond |
| OT-264 | LUC | Cattle Dipping Vat – Range Road 678 and Range Road 234 | Reservation, 1.5 miles northeast of Test Area A-31 |
| OT-265 | LUC | Cattle Dipping Vat – Owls’ Head Branch | Reservation, 500 feet west of U.S. Highway 331 |
| OT-269 | LUC | Cattle Dipping Vat – Cherry Branch | Reservation |
| OT-270 | LUC | Cattle Dipping Vat - Malone Creek | East of Camp Rudder on Eglin Reservation |
| OT-271 | LUC | Cattle Dipping Vat - Choctaw Field | East of Choctaw Field on Eglin Reservation |
| SS-278 | LUC | Cattle Dipping Vat – Green Ponds | Reservation |
| SS-274 | ACTIVE | Duke Field Fire Training Area | Duke Field |
| POI-500 | CLOSED | Range Road 291 Bermed Area | Reservation, adjacent to Santa Rosa County Holley Landfill |
| AOC-07 | LUC - Internal | Auxiliary Field No. 6 Disposal Area | Camp Rudder |
| AOC-91 | LUC - Internal | Pocosin Pond | Pocosin Pond Test Area |
| POI-417 | LUC - Internal | Site N-18, East Bay Swamp C-141 Crash Site | Western portion of Eglin Reservation in East Bay Swamp |
| POI-418 | LUC - Internal | C-52 Scrap Yard | Just north of Test Area C-52E |
| POI-419 | LUC - Internal | Test Area C-74L Dump Site | Just east of C-74L |
| LF-12 | LUC – Leased | Niceville/Valparaiso Landfill | Valparaiso |
| LF-21 | LUC – Leased | Wright Landfill | Reservation |
| LF-95 | LUC – Leased | Holley Navarre Landfill | Reservation, one mile east of State Road 87 and River Road intersection, at the end of River Road |
| POI-516 | ACTIVE | Cattle Dipping Vat – Honey Creek | Reservation, north-central portion approximately 3.3 miles northeast of Duke Field |
| POI-517 | ACTIVE | Cattle Dipping Vat – Pine Log Creek | Reservation, north-central portion approximately 2 miles southeast of Duke Field |

Source: U.S. Air Force, 2007b and U.S. Air Force, 2007e.



Cleanup of contaminated property to safe levels is the first priority of the ERP at Eglin AFB; however, lack of feasible and/or cost-effective remedies for some site conditions necessitates the use of Land Use Controls (LUCs). LUCs are mechanisms that are primarily used to limit human activities at or near a contaminated site. In general, LUCs can be implemented at active installations where: 1) typical cleanup measures are not prudent or feasible; 2) the historical and future land use at a site as reflected in the installation's land use plans is non-residential and compatible with LUC concept; 3) long-term LUC management systems can be effectively maintained; 4) LUCs offer advantages; and 5) the potential liabilities are limited.

LUCs may be implemented alone or as components of, or enhancements to, active remediation sites. They permit limited use of property while ensuring the effectiveness of remedial action, and the protection of human health and the environment over a long period of time. LUCs are designed to protect the public and the environment from residual hazardous substances during and after remediation. Active ERP sites which are subject to LUCs are identified in Figure 3-4 and in Table E-1 in Appendix E, Environmental Restoration Program Sites.

Legacy Debris Pits (LDPs) are areas where ordnance and explosive waste residues are present or buried in the water, soil, or sediment. LDPs fall under the Air Force Military Munitions Response Program (MMRP) and are managed by the installation's ERP. Eglin AFB's Environmental Restoration Branch (96 CEG/CEVR) identifies and manages LDPs to monitor known and potential areas of concern regarding munitions. LDP sites located on Eglin AFB are shown in Figure 3-4. LDP sites located within the ROI of the interstitial area are listed in Table 3-5. Details for LDP sites located within the interstitial area ROI are provided in Appendix E, Environmental Restoration Program and Legacy Debris Pit Sites, and detailed information on all LDP sites can be found in the *Archives Search Report for Legacy Debris Pits at Eglin AFB* (USACE, 2002).

Table 3-5. LDP Sites Located within the Interstitial Area ROI

| Map ID ¹ | Location | POI | Map ID ¹ | Location | POI |
|---------------------|------------------------------|-----|---------------------|---------------------------|-----|
| 01 | Atwell Pond | 600 | 12 | Test Area B-71 Location C | 611 |
| 02 | Auxiliary Field 5 Location A | 601 | 13 | Test Area B-75 | 612 |
| 04 | Range 3A Location D | 603 | 14 | Test area C-2 Location A | 613 |
| 05 | Range 6A Location H | 604 | 15 | Test Area C-2 Location H | 614 |
| 06 | Range 66 Location C | 605 | 16 | Test Area C-2A Location F | 615 |
| 07 | Test Area A-77 Location C | 606 | 19 | C-52B Near C-52B | 618 |
| 08 | Test Area B-70 Location A | 607 | 21 | Test Area C-64 Location A | 620 |
| 09 | Test Area B-70 Location B | 608 | 22 | Test Area C-72 Location H | 621 |
| 10 | Test Area B-70 Location D | 609 | 23 | Test Area D-51 Location A | 622 |
| 11 | Test Area B-71 Location A | 610 | 24 | Test Area D-51 Location B | 623 |

1. Only LDPs that are located within the interstitial ROI, as defined in Table 1-1, are listed.

3.6 BIOLOGICAL RESOURCES

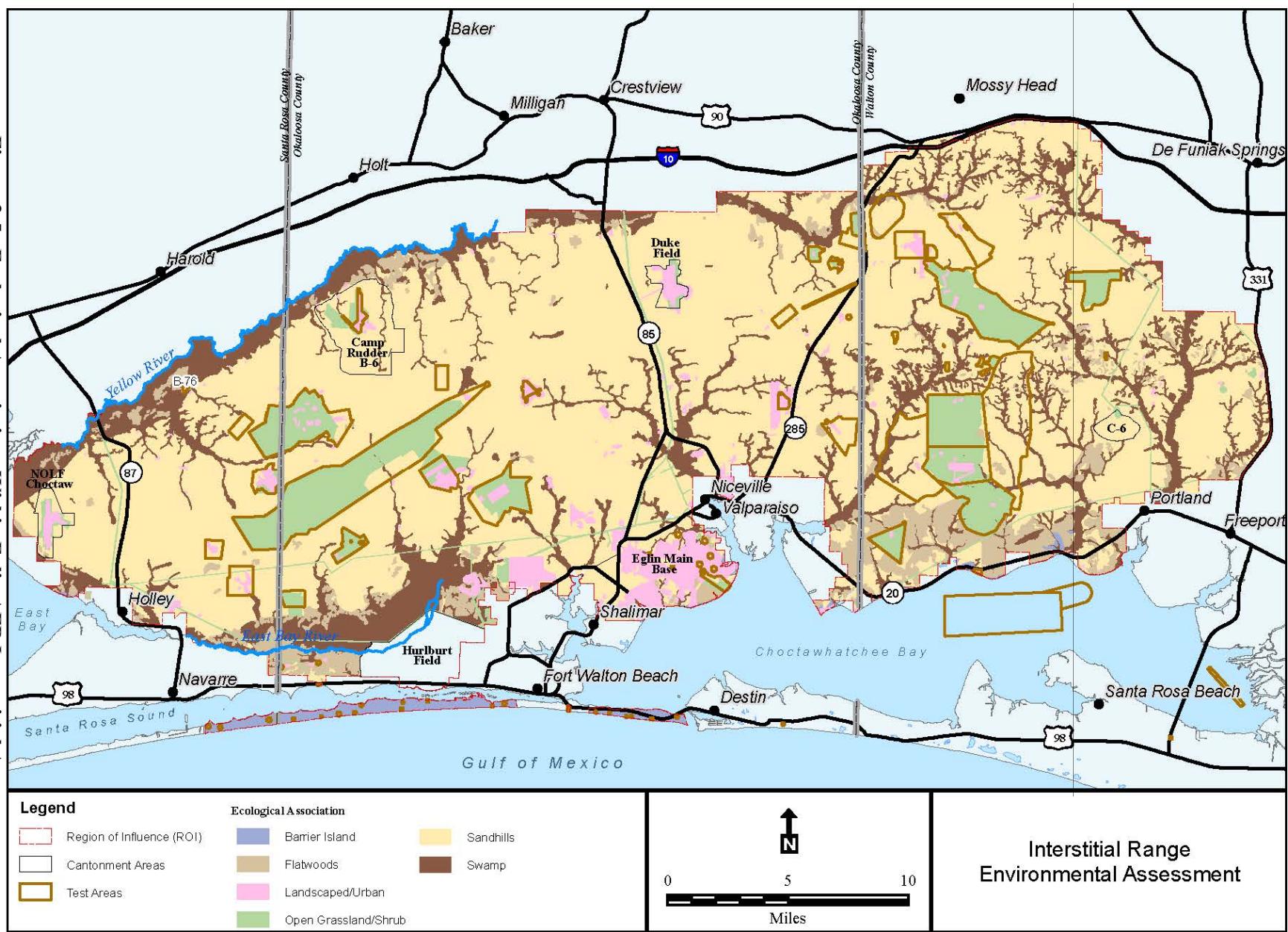
3.6.1 Definition

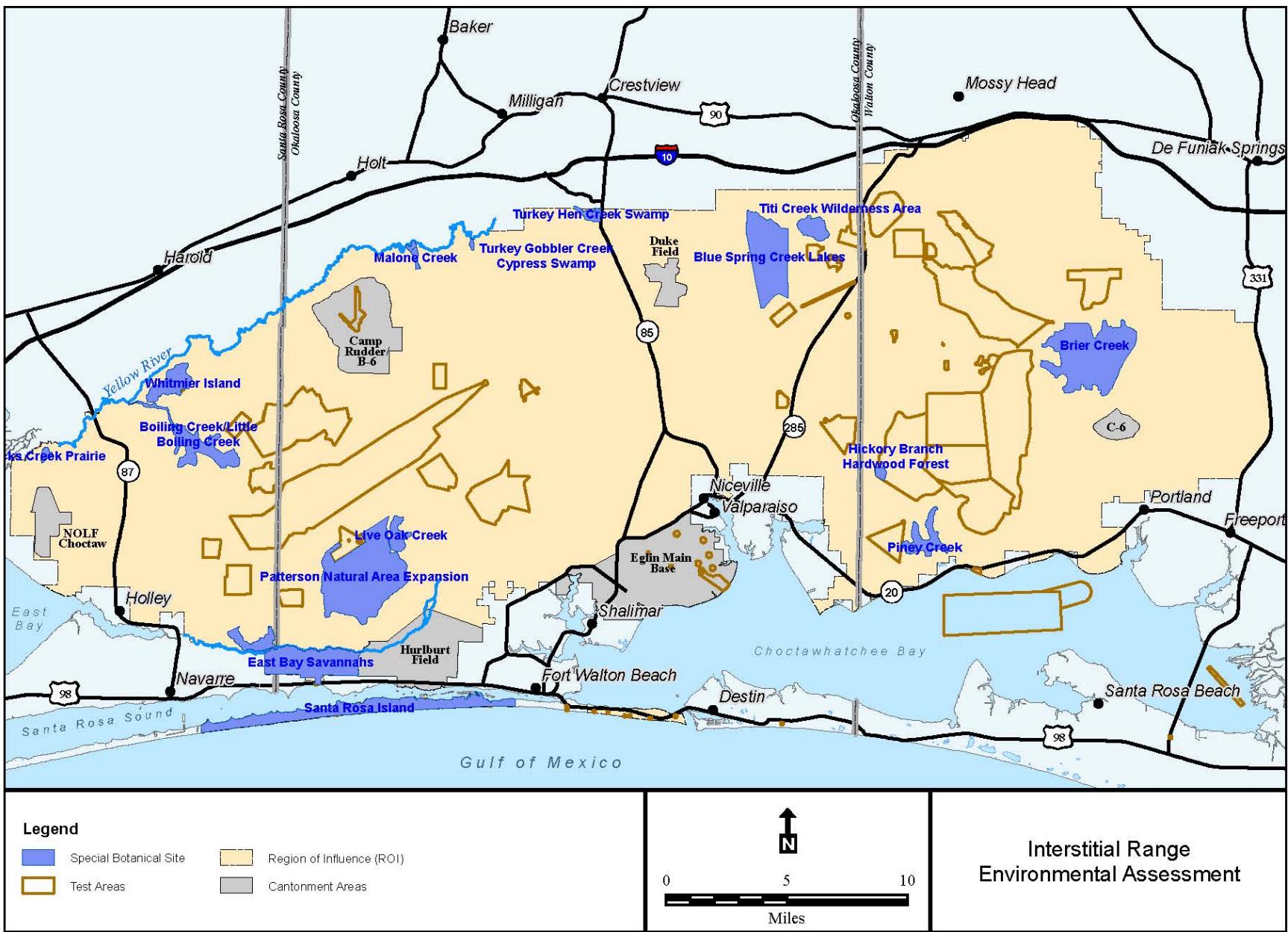
Biological resources include the terrestrial and aquatic plants and animals that inhabit the interstitial areas of Eglin AFB, along with the habitats where they reside. The interstitial habitats of Eglin AFB are home to an unusually diverse biological community including several sensitive species and habitats.

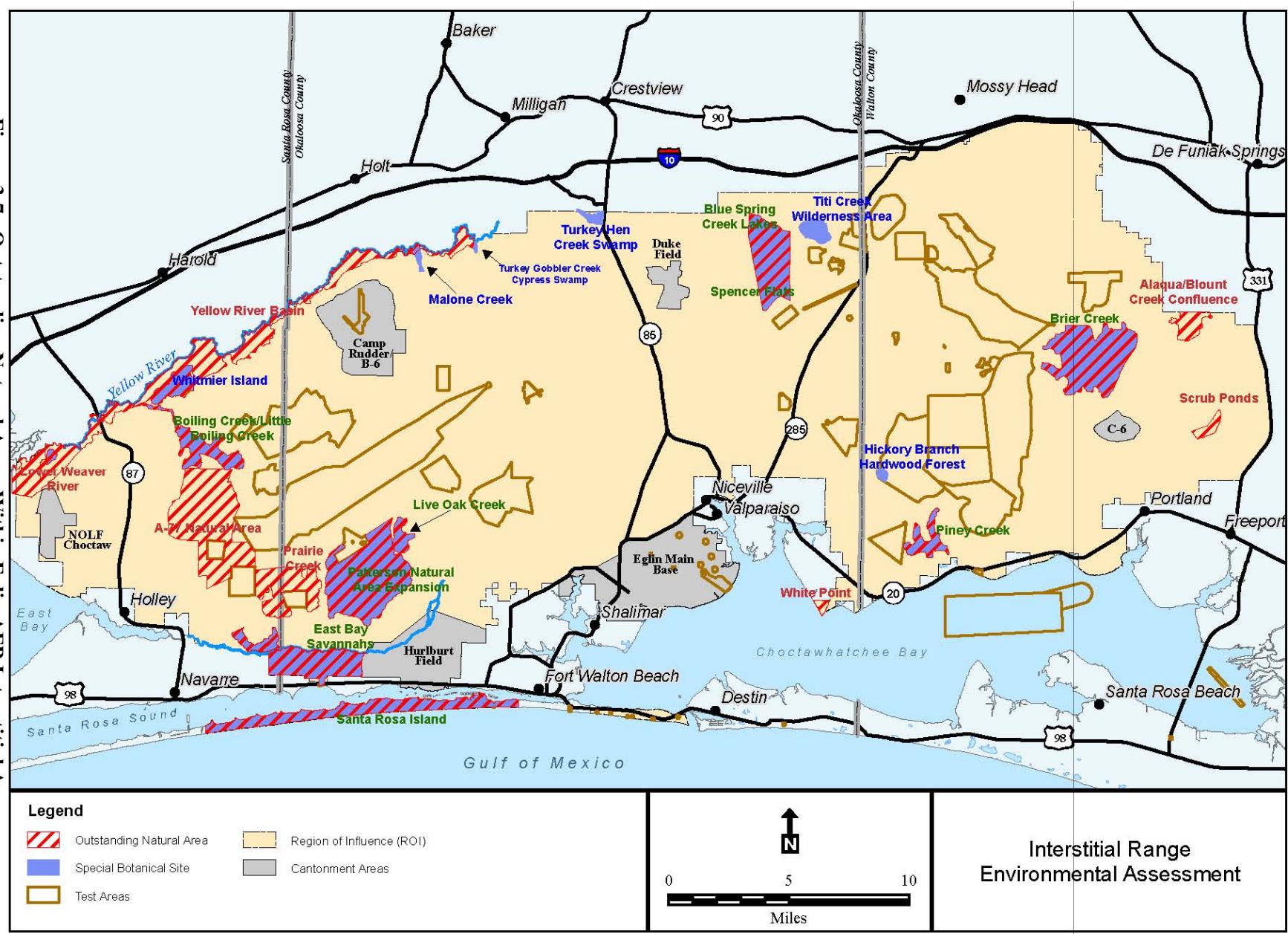
Eglin applies a classification system of ecological associations to all its lands, based on floral, faunal, and geophysical characteristics (U.S. Air Force, 2007c). Four broad ecological associations exist on Eglin AFB: Sandhills, Flatwoods, Wetlands/Riparian, and Barrier Island; all but the Barrier Island system occur within the interstitial areas of Eglin AFB Figure 3-5. Artificially maintained open grasslands/shrublands and urban/landscaped areas also exist on Eglin interstitial lands, but are primarily on test areas and Main Base. Appendix D, provides descriptions of the ecological associations at Eglin AFB and includes typical flora (plants) and fauna (animals) found within each of these associations.

Sensitive habitats include areas that the federal government, state government, or the DoD have designated as worthy of special protection due to certain characteristics, such as high species diversity, rare plant species, or other unique features. Sensitive habitats within or adjacent to the interstitial area include Significant Botanical Sites, Outstanding Natural Areas, High Quality Natural Communities, Outstanding Florida Waters, Aquatic Preserves, Gulf sturgeon critical habitat, wetlands, and floodplains (U.S. Air Force, 2007c) (Figure 3-6, Figure 3-7, and Figure 3-8). Wetlands and floodplains are discussed in Section 3.2, the Water Resources section. Outstanding Florida Waters, Aquatic Preserves, and Gulf sturgeon critical habitat are covered in the *Estuarine/Riverine Programmatic Environmental Assessment* (U.S. Air Force, 2004). Appendix D provides details on each of the sensitive habitat types found in interstitial areas.

Sensitive species are those species protected under federal or state law (see Appendix C, Relevant Laws, Regulations, and Policies), to include migratory birds and threatened and endangered species. A *migratory bird* is defined by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. An *endangered* species is one that is in danger of extinction throughout all or a significant portion of its range. A *threatened* species is any species that is *likely* to become endangered within the foreseeable future throughout all or a significant portion of its range. Multiple state and federally listed species are present in the interstitial areas of Eglin AFB (Figure 3-9, Figure 3-10). Appendix D provides additional detail on the natural history of sensitive species of particular interest within interstitial areas.





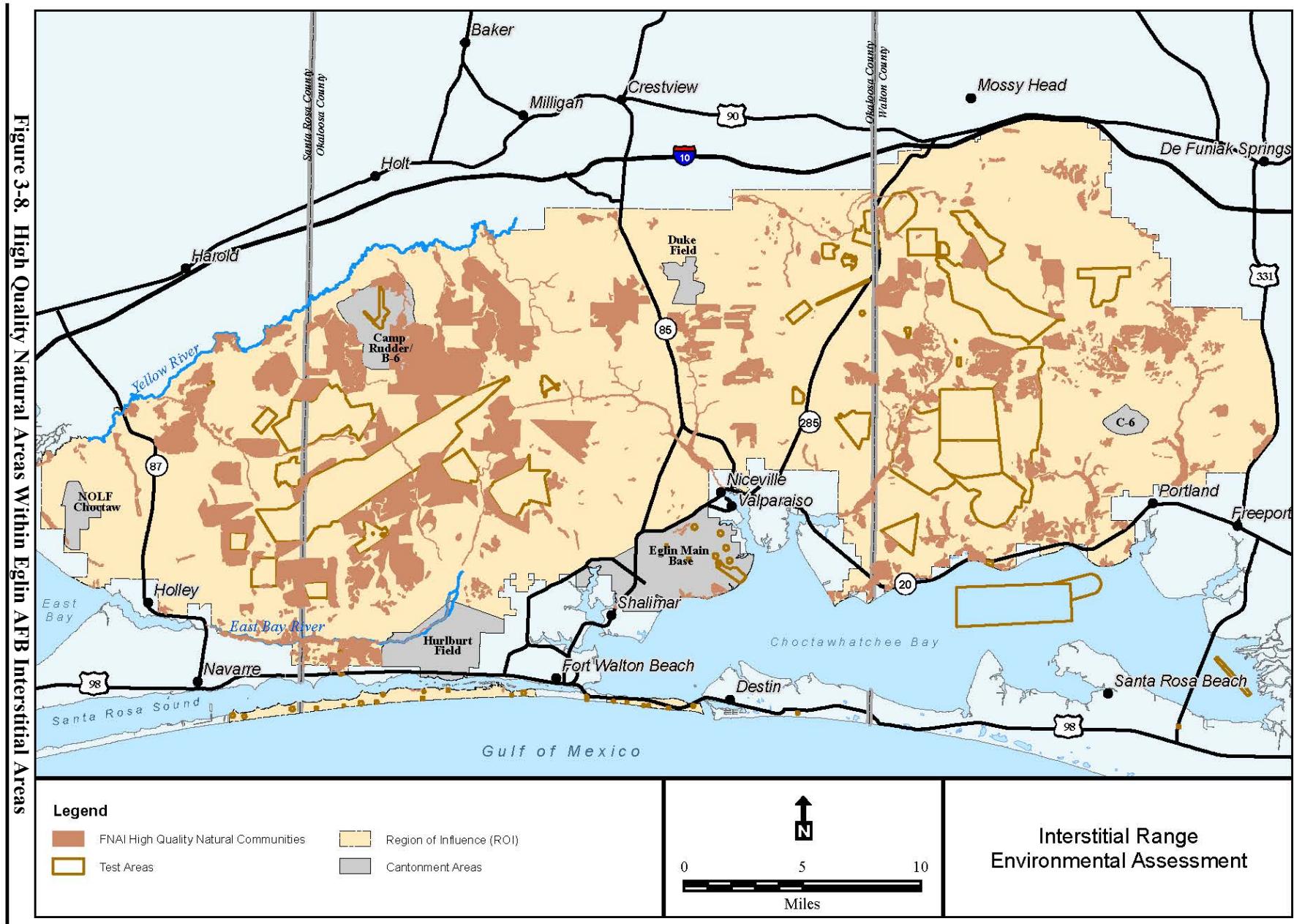


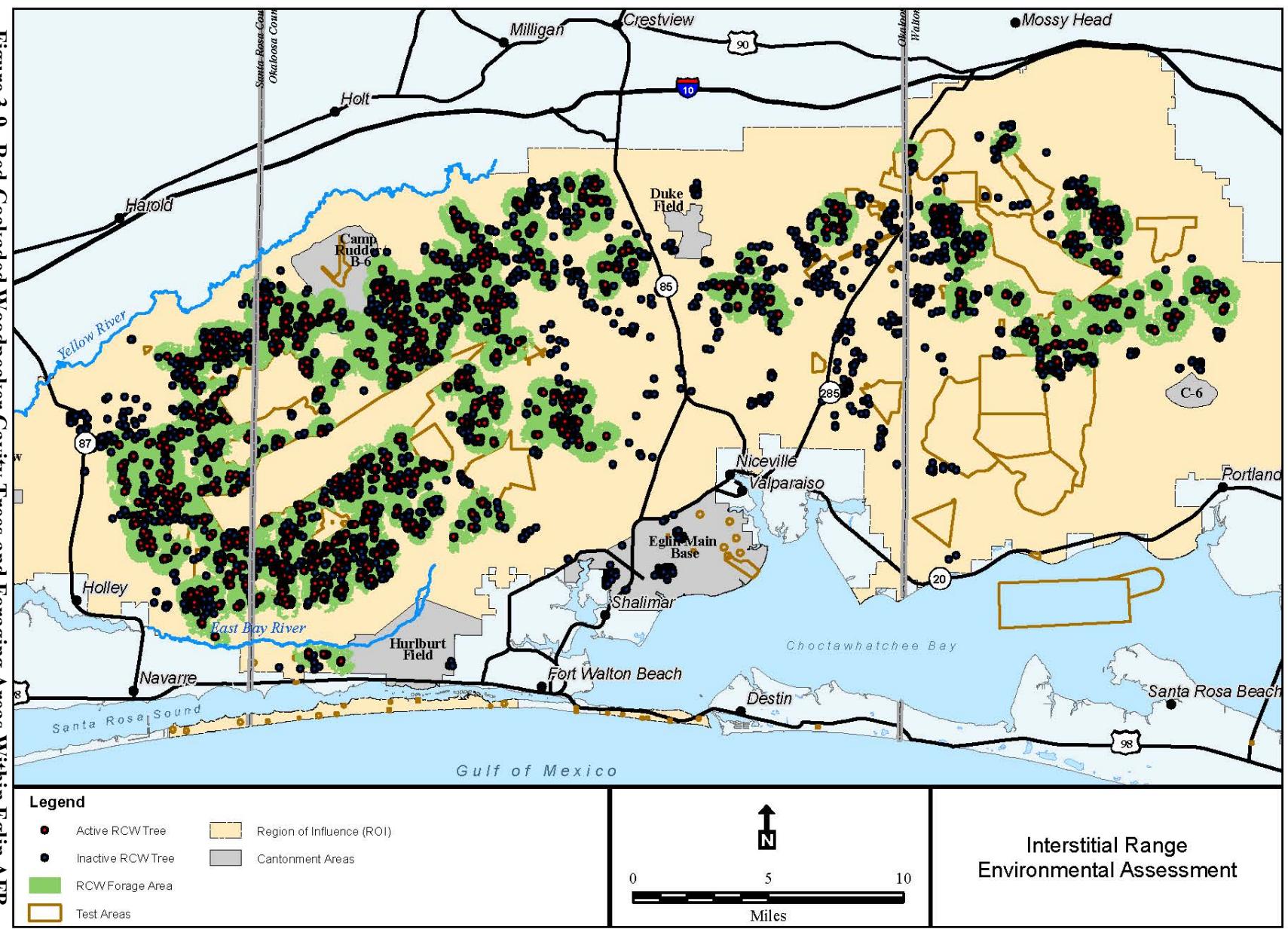
04/22/09

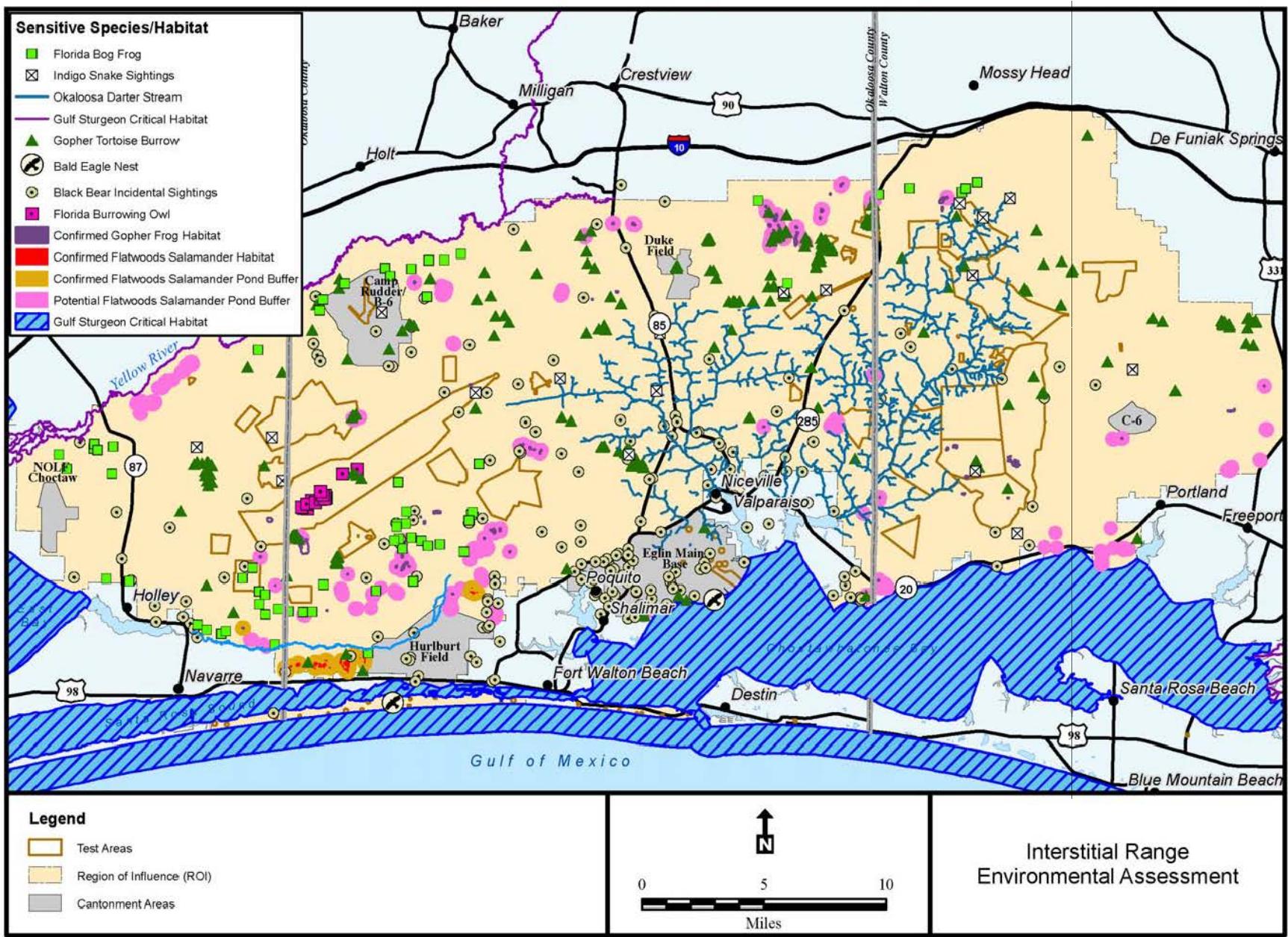
Final Interstitial Area Range Environmental Assessment, Revision 1

Eglin Air Force Base, Florida

Page 3-22







3.6.2 Region of Influence and Existing Conditions

Within the interstitial areas of Eglin are some of the best quality sandhills, flatwoods, and wetland/riparian habitats in the Southeast (Figure 3-6, Figure 3-7, and Figure 3-8). Eglin manages these areas with prescribed fire, native vegetation plantings, erosion control and restoration projects, and other appropriate natural resource management techniques. The frequently burned sandhills and flatwoods areas support multiple federally and state-listed species such as the RCW, flatwoods salamander, and gopher tortoise (Figure 3-9, Figure 3-10). The wetland and riparian areas of Eglin also host numerous listed species, including the Okaloosa darter, gopher frog, and Florida bog frog (Figure 3-10). While there are many interstitial areas with excellent habitat on Eglin, there are also areas of degraded habitat, such as fire suppressed sandhills overgrown with sand pine and areas along the urban interface where invasive species have encroached.

Ecological associations, sensitive habitats, and sensitive species differ geographically across Eglin AFB. Therefore, the ROI and existing conditions with respect to biological resources vary for the different training missions and associated interstitial areas. Site-specific biological conditions are discussed as part of Chapter 4 analyses for specific interstitial training activities that may affect sensitive habitats and species. For some training activities, generalizations regarding potential impacts to habitats and species and management actions were made across all interstitial areas, to be applied when pertinent.

3.6.3 Analysis Methodology

The first step in the analysis of potential impacts to biological resources was to determine the locations of sensitive habitats and species in relation to the Proposed Action. Maps were examined to locate sensitive species and habitats; and, where necessary, site visits and additional surveys were conducted to confirm locations. Next, areas of overlap for the Proposed Action and sensitive habitats and species were identified. Scientific literature was reviewed for studies that examined similar types of impacts to biological resources. The literature review included a review of basic characteristics and habitat requirements of each sensitive species. Where available, information was also gathered relative to management considerations, incompatible resource management activities, and threats to each sensitive species. Impact analyses were then conducted based on the information gathered from the literature review and discussions with experts in these areas. The analyses included an assessment of the impacts on biological resources resulting from ground operations, munitions and pyrotechnics use, and air operations in interstitial areas of Eglin AFB.

Where appropriate, projected conditions were compared to the baseline, and a determination was made as to whether the impact would be beneficial or adverse. For biological resources, conclusions were drawn regarding the extent of impacts in which the level of anticipated impact is or is not likely to result in jeopardizing the continued existence of the species (USFWS, 2008). Direct and indirect impacts to the species and its habitat are included in the analysis. The USFWS considers any impact to be significant if potential impacts are anticipated and the action is likely to jeopardize the continued existence of the species. Eglin AFB is conducting an Endangered Species Act (ESA) Section 7 consultation with the USFWS on federally listed species for the Preferred Alternative (Appendix D).

3.7 LAND USE

Land use generally refers to human management and use of land. In the interstitial area of Eglin AFB, the current land uses consist mainly of military and recreational use. Land use also includes natural resources management, which is discussed in detail in the *Integrated Natural Resources Management Plan* (U.S. Air Force, 2007c).

3.7.1 Military Use

The interstitial areas of Eglin AFB are mainly used for training activities. At times, these activities can overlap with other land uses, including recreation. Training activities are conducted by operational military units (proficiency training) and by established schools (initial training). Training activities occurring in the interstitial area include combat survival training, assault operations, parachute drops, air-to-ground tactical training, and major force-on-force and force employment exercises.

The western portion of the base supports training activities such as jungle, swamp, tank, water-related operations, emergency readiness, preflight survival, and Special Forces training sessions. The northern portion of the base supports the air-ground operations school, survival classes, weekend training encampments, extended exercises, and Special Forces training sessions. Bivouac areas near Duke Field and TA B-4 support thousands of troops for relatively brief periods. These can include command, control, and communications training; special operations; and joint operations. Eastern areas of the base support rescue, recovery, and Special Forces training, survival classes, extended exercises, weekend training, and emergency readiness. More detailed information on the types and location of each user group's military training activities is provided in Appendix A.

The interstitial area may also be used for missions that cannot be wholly accommodated within the footprints of individual test areas, or may serve as a safety buffer for certain activities on established test areas. The primary function of the safety buffer land use is to restrict incompatible activities during testing operations and to support test and evaluation activities on an as-needed basis. Test area weapon safety footprints may restrict the amount and type of activities during test and evaluation on other land areas in the interstitial area. The particular safety footprint size depends on the type of test or training being conducted and is addressed in separate documents.

3.7.2 Recreational Use

Various public recreational activities take place in the interstitial area of Eglin AFB. Approximately 272,000 acres of land are open to the general public, regardless of military affiliation, for outdoor recreation (U.S. Air Force, 2007d). An additional 2,076 acres is open, on the Main base, for Department of Defense employees, guests, and family members (U.S. Air Force, 2007d). Public recreation on Eglin is permitted during daylight hours only, with the exception of approved campsites after sunset. Outdoor activities include hunting, fishing, hiking, and camping, the most popular being hunting and fishing. Numbers on the frequency of use or areas most intensely used are not available (U.S. Air Force, 2007c).

There are 15 management units, each having its own regulations associated with seasons, mission activities, and access to the public and DoD-affiliated persons. All persons that engage in outdoor recreational activities are required to adhere to applicable Eglin AFB, federal, and state laws, rules, and regulations. General regulations are in place that address prohibited

actions; for example, disturbing or removing any government property from the Eglin Reservation is prohibited. Entry into both “closed” areas and “seasonally closed” areas is prohibited unless the Commander of Eglin AFB has granted special permission. Areas designated as “open” are available for all types of outdoor recreation with the exception of hunting (see Figure 3-11). Annual rules, regulations, permits and maps for recreational activities can be obtained from 96 CEG/CEVSN at Eglin AFB (U.S. Air Force, 2007d).

Recreational, hunting, and fishing permits are required for anyone 16 years or older entering Eglin AFB. Any person under the age of 16 is required to purchase a permit only if they are hunting. Those persons hunting, fishing, or in possession of equipment used for these activities must have applicable state and federal licenses, stamps, and permits (U.S. Air Force, 2007d). Table 3-6 shows the number of recreation, hunting, fishing, forest products, and camping permits that have been issued for Eglin AFB between FY2005 and FY2007.

Table 3-6. Recreational Permits Issued for Eglin AFB Between FY2005 and FY2007

| Type of Permit | 2005 | 2006 | 2007 |
|----------------------|---------------|--------|--------|
| Hunting | 4,997 | 5,309 | 5,466 |
| Fishing | 3,629 | 4,317 | 4,305 |
| Recreation | 5,615 | 5,904 | 5,883 |
| Forest Product | 268 | 400 | 553 |
| Camping ¹ | 625 | 592 | 612 |
| Total | 15,134 | 16,522 | 16,819 |
| Grand Total | 48,475 | | |

Source: Johnson, 2007

1. Numbers do not include permits from using the Florida National Scenic Trail.

Hunting

Hunting is allowed in designated areas during open hunting season. Trapping of certain species is also legal, but the use or possession of steel traps is prohibited. The hunting or trapping of threatened and endangered species is prohibited. There are 180,000 acres open to dog hunting and 90,000 acres open to still hunting, where dog hunting is not allowed (U.S. Air Force, 2007d). Three hunting seasons (archery, general gun, and late primitive weapon) are established on Eglin AFB (Table 3-7).

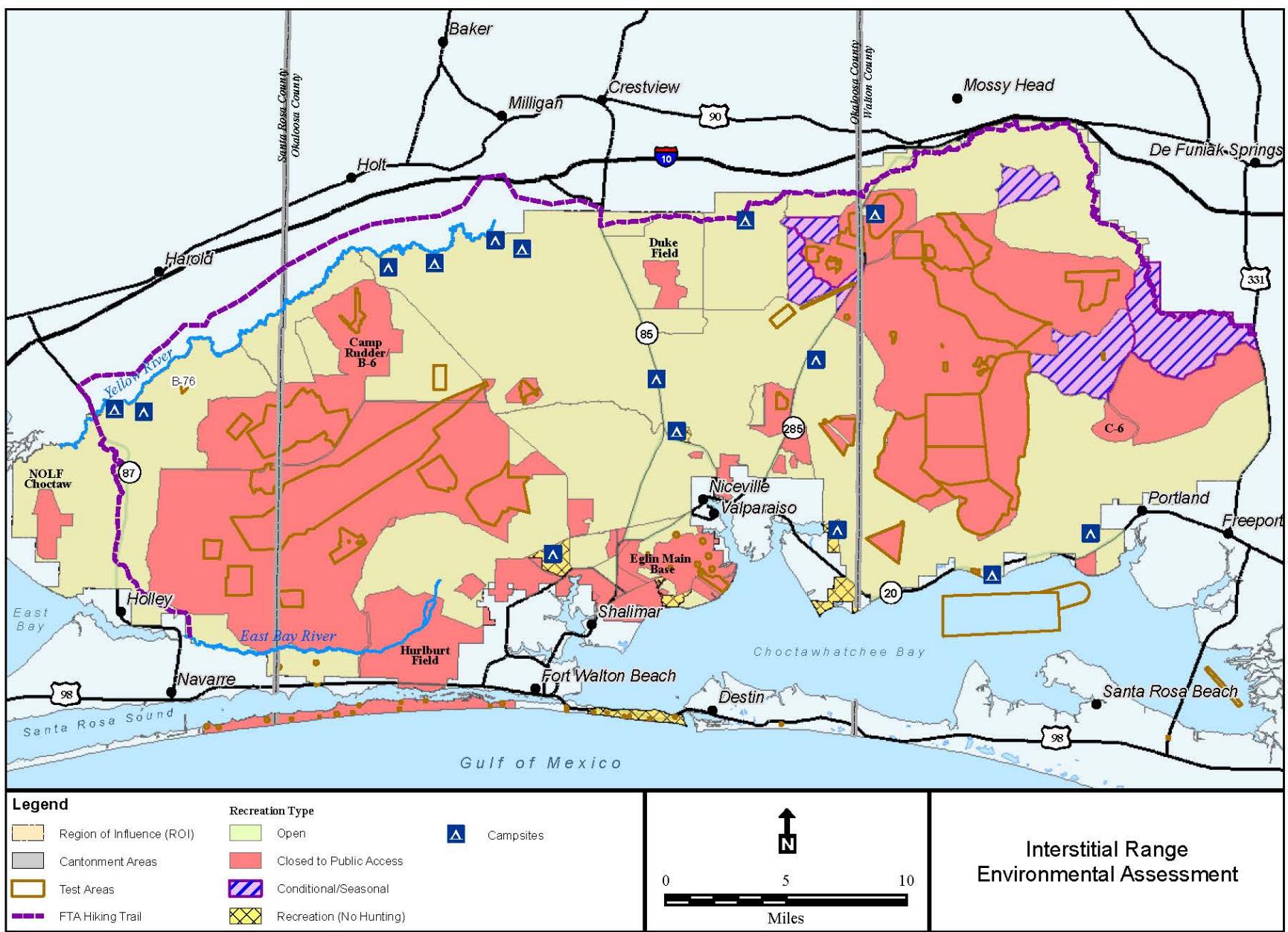
Table 3-7. Hunting Seasons¹ on Eglin AFB in FY2008

| Activity | Season |
|---|---|
| Hunting | |
| Spring turkey | 15 Mar through 20 Apr |
| Early small game* | 12 Nov through 24 Feb *MU 6 |
| Late small game | 2 through 18 Jan |
| Varmint/predator** | 15 May through 15 Jun **MU 12 only |
| Trapping | 1 Dec through 1 Mar |
| Archery | 13 Oct through 11 Nov |
| Muzzle loading gun | 16 through 18 Nov |
| General gun | 22 through 25 Nov, 8 Dec through 1 Jan, 19 Jan through 27 Feb |
| Late primitive weapon | 14 through 24 Feb |
| Forest products | Each management unit differs |
| Other activities (i.e., fishing, berry picking, etc.) | No established seasons in open areas |

Source: Johnson, 2007

1. Seasons may vary according to each individual management unit.

Interstitial Range Environmental Assessment



Fishing

Fishing is allowed in all ponds and streams within open areas. Approximately 16 bodies of water totaling 187 acres are within the interstitial area that may be used, including Anderson, Atwell, Brandt, Brown, Buck, College, Crain, Duck, Indigo, Jack, Jr. Walton, Kepner, Upper Memorial, Timberlake, Weekly, and Hurlburt Lake ponds. Any persons fishing must have both an Eglin Fishing Permit and a Florida State Fishing License. The use of outboard motors is prohibited on all ponds. Boats with outboard motors may be launched, but the motor may not be started at any time (U.S. Air Force, 2007d).

Camping

An Eglin Camping Permit, which notes a specific campsite, is required by any persons proposing to camp on the Reservation. Camping is permitted in 15 specific camping areas: Anderson Pond, Basin Bayou, Blue Springs, Buck Pond, Carr Landing, Duck Pond, Gin Hole Landing, Indigo Pond, Jr. Walton Pond, Kepnar Pond, Metts Bluff, Rocky Creek, Speck Pond, Timberlake Pond, and Weaver Road camping areas (Figure 3-11). Camping is permitted year-round; however, it not permitted for more than five consecutive days at a designated campsite unless special permission is granted (U.S. Air Force, 2007d).

Other Activities

Hiking, bicycling, walking, picnicking, pleasure driving, berry picking, boating, horseback riding, swimming, bird watching, and collection of forest products are other activities that regularly occur on the Eglin Reservation. All of these activities can be performed with an Eglin Recreation Permit with the exception of collecting forest products, such as deer moss, palmetto, pine straw, and wood mulch. These activities require an Eglin Forest Products Permit. The cutting of live water oak, laurel oak, southern red oak, live oak, and standing pine trees is prohibited. The cutting of scrub oak (turkey oak, sand live oak, sand post oak, and blue jack oak) is permitted. However, the following management areas are closed to cutting: 1, 2, 3, 4, 5, 7, 8, 9, and 11. The taking of one Christmas tree (sand pine) per family is allowed each year with a Christmas Tree Permit. No threatened or endangered plant species can be removed from the Reservation (U.S. Air Force, 2007d).

3.8 SAFETY

The existing safety environment encompasses risk to public health and, with respect to training activities, risk to the health of military personnel, and those measures designed to minimize that risk. For actions occurring on military property with inherent safety risks, procedures are in place that minimize or altogether eliminate risks to the public. Such measures include the designation of areas as “restricted” or “closed” to the public, either permanently or temporarily. Such closures are driven by the dimensions of the “safety footprint” of a particular action that may have potentially harmful noise, blast, or other effects, or by the existence of unexploded ordnance from past missions.

The interstitial area supports no ground munitions testing, and training activities use no live ammunition. Therefore, ground operation effectors examined for safety include troop

movements, small arms (blanks only), and pyrotechnics. This section presents information concerning the existing Range safety conditions at Eglin AFB. It includes a discussion of the safety regulations and process, safety organizations and responsibilities, and other safety procedures for interstitial training activities.

3.8.1 Regulatory and Management Overview

This section discusses the regulations, policies, and management protocols in place at Eglin AFB for Range safety that impact interstitial use. The primary regulations that establish relevant safety policy and define requirements and procedures for conducting tests on Eglin AFB and areas under its jurisdiction are found in AAC Instruction 91-201, *Test Safety Review Process*. This guidance is implemented by the AAC Range Safety Office (AAC/SE) and supporting organizations. The Test Safety Review Process described in AAC Instruction 91-201 implements the Operational Risk Management (ORM) process, as specified in AFI 90-901 for all AAC test programs, and reflects the practical application of ORM as outlined in Air Force Pamphlet (AFPAM) 90-902, *ORM Guidelines and Tools*. The steps in the ORM process, as they relate to the Test Safety Review Process are (U.S. Air Force, 2000):

- **Identify the hazards.** Personnel involved with the test or activity act as a team to identify all potential hazards.
- **Assess the potential risk.** Assess the probability and severity of loss from exposure to the identified hazard.
- **Analyze risk control measures.** Investigate specific strategies and tools that reduce, mitigate, or eliminate the risk.
- **Make control decisions.** Approve the best risk control or combination of controls based on the analysis of overall costs and benefits.
- **Implement risk controls.** Once procedures to minimize identified hazards have been determined and approved at the appropriate level, those procedures are implemented during the conduct of the test.
- **Supervise and review.** Continue the ORM process throughout the accomplishment of every test program.

This instruction affects all test operations that are conducted under a 46th Test Wing Test Directive. It includes ground-training activities involving 96 CEG personnel, aircraft, equipment, or airspace. It applies to system program managers, program engineers, test engineers, Range safety engineers, and aircrews that are responsible for incorporating safety planning and review into the conduct of test and training programs.

Safety procedures associated with routine training operations are implemented through the individual organization, based on its specific training protocols/guidance.

3.8.2 Standard Safety Procedures

A number of standard safety procedures exist to ensure limited public access to affected training areas during test implementation. These procedures require every practical effort to keep the designated training areas clear of all nonparticipating persons and vehicles.

Large portions of Eglin AFB are closed to public use, facilitating Range clearance operations. Depending on the type of training being conducted, contingency personnel may stand by in case of emergencies (U.S. Air Force, 2003).

3.8.3 Unexploded Ordnance

Unexploded ordnance (UXO) is any munitions device containing explosive material (i.e., live) that did not detonate upon impact with the surface but still has the potential to detonate. UXO is a potential problem across much of the Eglin Range Complex as a result of past mission activities. Eglin AFB has been testing munitions for over 60 years. During its long history, a vast number of different munitions items have been expended throughout the Range as part of routine training and special testing activities. While UXO is an unintended but unavoidable consequence of any operation involving energetic material, only recently has the Air Force published standards for munitions residue maintenance, remediation, and documentation.

Eglin has conducted an archive search in order to document the locations of formerly used ranges, but has yet to conduct any basewide assessment of UXO contamination suitable to support an analysis of risk to training units. Previous informal analyses have centered on identifying areas with low enough risk to allow public recreation or to outgrant nonexcess real property. Currently, the Air Armament Center Directorate of Safety office handles requests on a case-by-case basis and controls the risk by limiting the type, location, or frequency of the requested action, based on an informal risk assessment using local historical knowledge, the *U.S. Army Corps of Engineers Archive Search Report*, and the *Eglin Reservation Explosives Contamination* study from July 1976.

As a part of the Eglin Range Unexploded Ordnance (UXO) and Residue Management program, the Legacy Work Group (LWG) helps set priorities and determines resources for the remediation of legacy debris pits. The LWG updated the UXO map in 2004 using data from the 1976 and 1989 UXO maps, current test area coverage, and the U.S. Army Corps of Engineers *Eglin AFB Ordnance and Explosives Archives Search Report* of October 2000. The updated UXO map used the current and historical data to more accurately depict UXO probability on Eglin AFB (U.S. Air Force, 2004b). Legacy Debris Pits and Surface and Target Debris Piles located within the Interstitial Area are summarized in Table 3-8.

The LWG consists of representatives from the 96th Civil Engineer Group/Environmental Management Restoration (96 CEG/CEVR), 96th Civil Engineer Group/Explosive Ordnance Disposal (96 CEG/CED), 46th Test Wing/Range Environmental Planning (46 TW/XPXE), 46th Test Wing/Technical Directorate/Range Services Division/Land Ranges (46 TW/TSRSL), Range Safety (AAC/SE), 96th Civil Engineer Group/Environmental Stewardship of Natural Resources (96 CEG/CEVSN), and O&M Contractor. As required, other members of the Range UXO and Residue (RUXOR) IPT may augment the work group.

Table 3-8. Legacy Debris Pits and Surface Debris Locations in the Interstitial Area

| Name | Location | Description |
|--|-------------------------------|---|
| Legacy Debris Pits | | |
| Atwell Pond | N30° 33' 41.5" W86° 52' 26.2" | The area of concern is marked with one metal blue sign stating probability of munitions residue in area. A large number of metal anomalies are in the ground surrounding the sign. Metal scrap can be seen protruding from the ground. The area is approximately 75 feet by 100 feet in size and is located at the entrance of a sand/clay pit. |
| Range 3A Location D | N30° 40' 49.2" W86° 36' 18.0" | The suspect site is a sand/clay pit. A large mound is the area of concern; there are a large number of metal anomalies in the ground. The area of concern is about 25 feet by 25 feet. |
| Range 6A Location H | N30° 39' 26.9" W86° 42' 49.3" | The area is a possible disposal munitions disposal pit. A large number of metal anomalies can be found in the area. The depression is approximately 40 feet off the roadway and estimated to measure 30 feet by 20 feet. |
| Range 66 Location C | N30° 34' 38.1" W86° 22' 54.5" | Large anomalies were found inside a trench area 20 feet by 50 feet. |
| Surface and Target Debris Piles | | |
| Anderson Branch Surface Debris Area | N30°33' 20.7" W86° 29'49.45" | Large amounts of munitions reside in this area and trash is on the surface along with electronic equipment. Parts of metal drums and other large pieces of metal scrap are in the woods behind the firing line, . |
| Range 3 Location C | N30°37' 08.8" W86° 35'03.3" | The site is covered with a number of large plastic sheets. The plastic sheets were part of an unknown test. No munitions were found. |
| Range 4A Location F | N30° 32' 21.7" W86° 37' 36.2" | Area of concern is located next to a concrete building next to a test track. There is also a surface trash pile containing metal truck parts, metal fuse boxes, and other trash. |
| Rifle Range Location A | N30° 33' 12.4" W86° 28'50.0" | 500-yard target butt. The area of concern is the target trench, which is 15 feet deep and 200 feet long. The metal frames from targets are still in the trench. Heavy vegetation is inside the trench; no munitions were found. |
| Rifle Range Location B | N30° 33' 07.0" W86° 28'58.8" | 300-yard target butt. The area of concern is the target trench, which is 15 feet deep and 200 feet long. The metal frames from targets are still in the trench. Heavy vegetation is inside the trench; no munitions were found. |
| Rifle Range Location C | N30° 33' 02.7" W86° 29'07.4" | 200-yard target butt. The area of concern is the target trench, which is 15 feet deep and 200 feet long. The metal frames from targets are still in the trench. Heavy vegetation is inside the trench; no munitions were found. |

Source: USAF, 2002b

Some areas of Eglin AFB have been classified as clean and do not have access restrictions. These areas either have never been used for munitions and/or the near surface has been checked for the presence of UXO. However, the interstitial area is considered potentially contaminated with UXO that may have resulted from historical activities (U.S. Air Force, 1998a).

3.8.4 Restricted Access

Restricted access pertains to the temporary closure of interstitial areas because of mission activities. The purpose of restricting access to the public during these times is to ensure their safety while maintaining mission integrity. Receptors potentially impacted would include the military and the public desiring to use recreational areas. Guidance for restricted access is utilized to coordinate public and military use of land within the interstitial area. Interstitial areas in use are closed to all forms of public recreation. Interstitial areas permanently closed to the

public are previously shown in Figure 3-11. Military missions conducted in the interstitial area may require certain areas to be closed to the public for various periods of time. Recreational access information is available on a daily basis by calling the Base Information Line (U.S. Air Force, 2003).

3.9 SOCIOECONOMIC RESOURCES

This section discusses the socioeconomic resources that have the potential to be impacted by activities in the interstitial area of Eglin AFB. The primary issues include environmental justice concern areas as well as areas containing a high concentration of children.

3.9.1 Environmental Justice

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (Environmental Justice)*, was issued to focus the attention of federal agencies on human health and environmental conditions in minority populations and low-income populations. The EO was established to ensure that disproportionately high and adverse human health or environmental effects of federal actions on these populations are identified and addressed. The environmental justice analysis addresses the characteristics of race, ethnicity, and poverty status of populations residing in areas potentially affected by the proposed federal action. The purpose of this analysis is to identify disproportionate human health and safety and environmental impacts on minorities and low-income communities and to identify appropriate alternatives.

The DoD Strategy on Environmental Justice was adopted on 24 March 1995. It includes a summary report, strategy on environmental justice, and implementation plan and states that DoD will use the National Environmental Policy Act as the primary mechanism to implement the provisions of EO 12898. AFI 32-7061, 2003, which incorporates by reference 32 CFR Part 989, *The Environmental Impact Analysis Process (EIAP)*, as the controlling document for the Air Force EIAP, addresses the need for consideration of environmental justice issues in the impact analysis process

For the purpose of this analysis, minority and low-income populations are defined as follows:

Minority Populations: All persons identified by the Census of Population and Housing to be of Hispanic or Latino origin, regardless of race, plus non-Hispanic persons who are Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other (i.e., non-white) Race or Two or More Races. For purposes of the analysis, the minority population is calculated by subtracting the number of persons who are White but not Hispanic, from the total population.

Low-Income Populations: All persons that fall within the statistical poverty thresholds published by the U.S. Census Bureau in the Current Population Survey are considered to be low-income. For the purposes of this analysis, low-income populations are defined as persons living below the poverty level (\$16,895 for a family of four with two children, adjusted based on household size and number of children), as reported in the

2000 Census. The 2000 Census asked people about their income in the previous calendar year. Therefore, poverty estimates reported in the 2000 Census compare family income in 1999 with the corresponding 1999 poverty thresholds. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being below the poverty level. The percentage of low-income persons is calculated as the percentage of all persons for whom the Census Bureau determines poverty status, which is generally a slightly lower number than the total population because it excludes institutionalized persons, persons in military group quarters and college dormitories, and unrelated individuals under 15 years old.

Areas of concern for Environmental Justice are given in Figure 3-12.

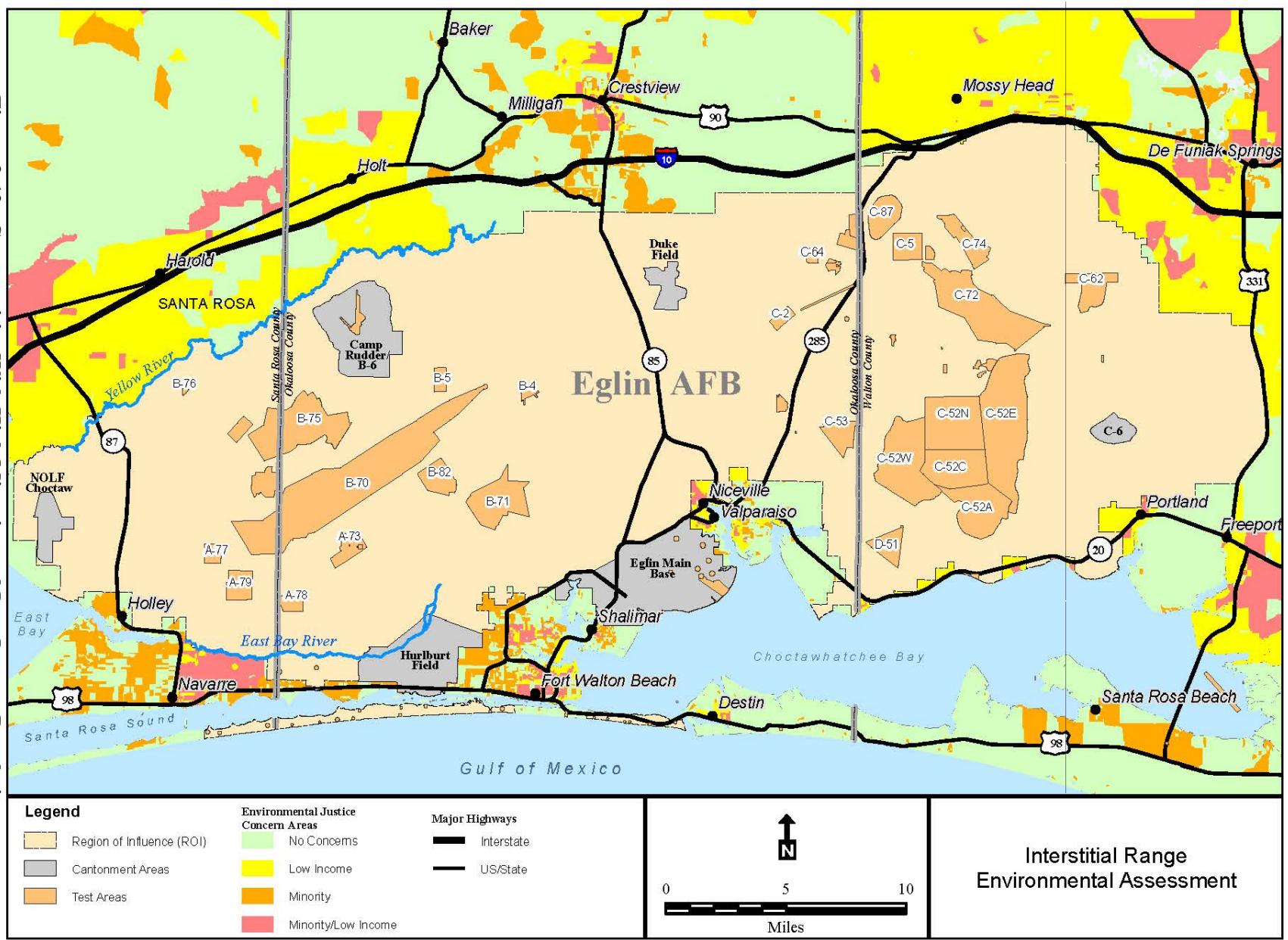
3.9.2 Risks to Children

In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children)*, was issued to identify and address issues that affect the protection of children. The EO states that “environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).” Higher concentrations of children occur in schools, community childcare facilities, and hospitals than in residential areas. The facilities that have the potential to be impacted by activities in the interstitial areas are shown in Figure 3-13.

3.9.3 Noise Complaints

People and physical structures that are potentially susceptible to noise effects from the activities conducted at Eglin AFB are in communities surrounding the Eglin Reservation. Although in the past the greatest number of noise complaints has generally come from Navarre, in recent years a larger proportion of noise complaints have come from the city of Niceville. Table 3-9 provides examples of noise complaints received during 2006 on Eglin. However, as can be seen from Table 3-10, those cities with a high number of complaints were often the result of a single resident submitting multiple complaints.

In 2006, 35 complaints were made from the Niceville area, but 26 of those complaints were made from a single resident in Niceville. In 2005, the same Niceville resident was responsible for making all of the 14 low flying noise complaints. Table 3-10 shows the total number of complaints per city in 2006 and the actual number of complainants. The total number of complainants during 2006 represents less than 0.01 percent of the total population for the three counties that the cities encompass.



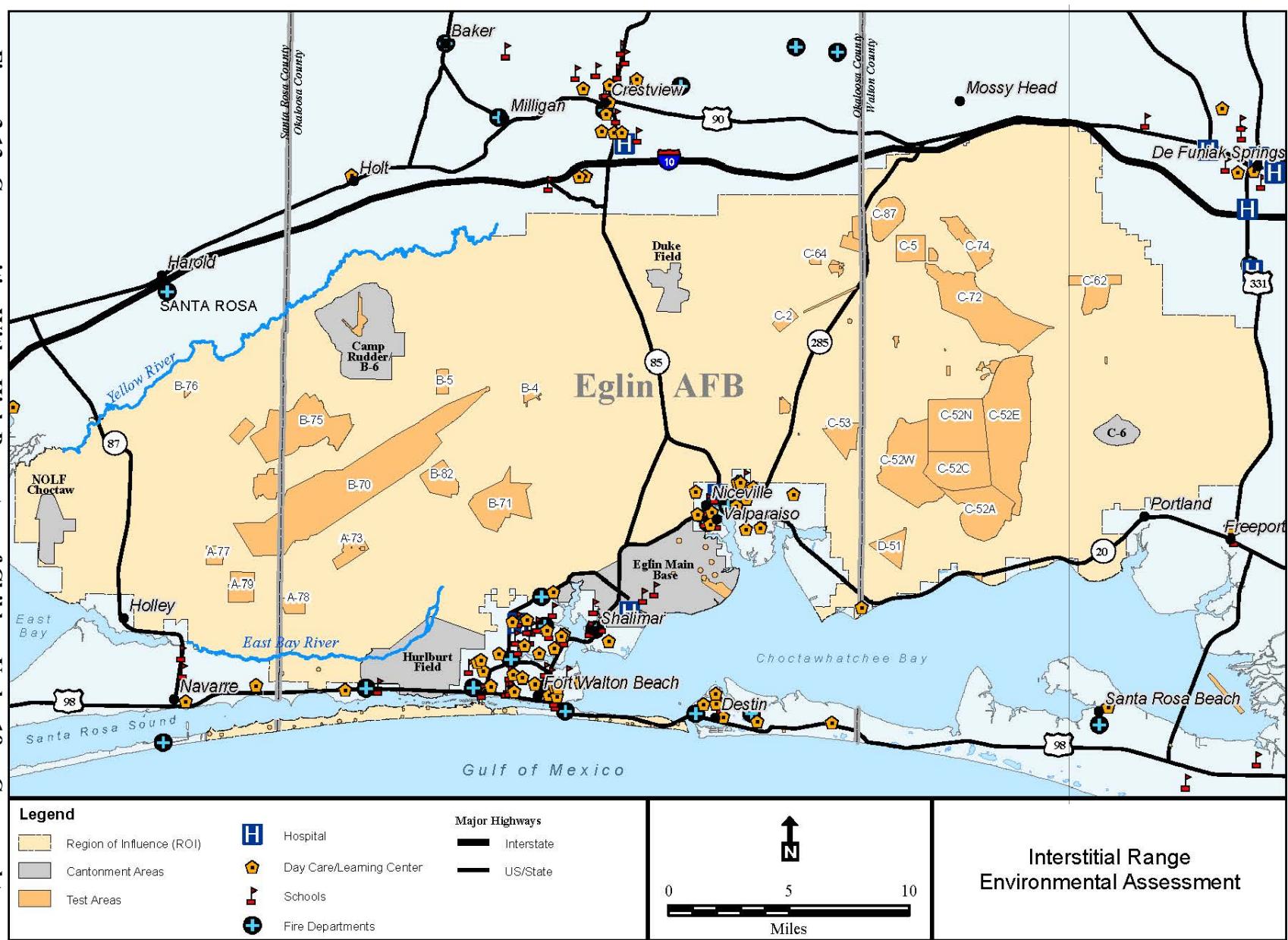


Figure 3-13. Communities With a High Percentage of Children Under 18 as Compared to County Averages

Table 3-9. 2006 Noise Complaint Data

| Location | Complaint | Number of Complaints |
|-------------------|------------------|----------------------|
| Choctaw Beach | Noise | 2 |
| Choctaw Beach | Sonic Boom | 1 |
| Crystal River | Low Flying/Noise | 1 |
| DeFuniak Springs | Noise | 1 |
| Destin | Noise | 2 |
| Destin | Explosion | 1 |
| Destin | Sonic Boom | 4 |
| Eglin | Sonic Boom | 1 |
| Freeport | Sonic Boom | 4 |
| Freeport | Explosion | 1 |
| Fort Walton Beach | Sonic Boom | 1 |
| Holt | Low Flying/Noise | 1 |
| Merrin Beach | Low Flying/Noise | 1 |
| Milton | Low Flying/Noise | 1 |
| Miramar Beach | Sonic Boom | 1 |
| Navarre | Sonic Boom | 1 |
| Niceville | Noise | 8 |
| Niceville | Low Flying/Noise | 24 |
| Niceville | Explosion | 1 |
| Niceville | Sonic Boom | 2 |
| Poquito Bayou | Noise | 1 |
| Santa Rosa Beach | Noise | 3 |
| Santa Rosa Beach | Low Flying/Noise | 1 |
| Santa Rosa Beach | Sonic Boom | 8 |
| Shalimar | Noise | 3 |
| Shalimar | Low Flying/Noise | 1 |
| Shalimar | Sonic Boom | 1 |

Source: Walsh, 2007

Table 3-10. 2006 Noise Complainant Data

| City | Total Number of Complaints | Total Number of Complainants |
|-------------------|----------------------------|------------------------------|
| Choctaw Beach | 3 | 1 |
| Crystal River | 1 | 1 |
| DeFuniak Springs | 1 | 1 |
| Destin | 7 | 6 |
| Eglin | 1 | 1 |
| Freeport | 5 | 4 |
| Fort Walton Beach | 1 | 1 |
| Holt | 1 | 1 |
| Merrin Beach | 1 | 1 |
| Milton | 1 | 1 |
| Miramar Beach | 1 | 1 |
| Navarre | 1 | 1 |
| Niceville | 35 | 6 |
| Poquito Bayou | 1 | 1 |
| Santa Rosa Beach | 12 | 6 |
| Shalimar | 1 | 1 |

Source: Walsh, 2007

3.10 CULTURAL RESOURCES

Cultural resources consist of prehistoric and historic sites, structures, artifacts, and any other physical or traditional evidence of human activity considered relevant to a particular culture or community for scientific, traditional, religious, or other reasons.

Numerous laws and regulations address the management of these cultural resources. The NHPA of 1966 was enacted to reinforce adherence to these federal guidelines. Section 106 of the NHPA requires that federal agencies analyze the impacts of federal activities on historic properties, which are cultural resources included in, or eligible for inclusion in, the National Register of Historic Places. Section 110 of the NHPA requires that federal agencies systematically inventory any cultural resources that are located within their boundaries and to nominate those found to be significant for inclusion into the National Register.

All land areas at Eglin AFB are systematically surveyed as part of Air Force compliance requirements to inventory all cultural resources. This proactive approach to cultural resources management has resulted in approximately 71 percent of the base cleared of cultural resource concerns (U.S. Air Force, 2008a). Of the 463,128 acres comprising the Eglin Military Complex, almost 200,000 acres have been surveyed with approximately 2,300 cultural sites identified, including both prehistoric and historic resources. The interstitial area contains hundreds of archaeological sites that are eligible or potentially eligible for listing on the National Register, spanning a period of time from 8000 B.C. to the Cold War era. Of 2,279 sites identified on Eglin AFB, 139 are eligible, 334 are potentially eligible, 1804 are ineligible, and 2 are listed to the NRHP (U.S. Air Force, 2008a).

The Air Force's utilization of predictive modeling, determines areas likely to contain significant archaeological sites. The predictive model highlights previously unsurveyed property that has been determined (due to specific physical attributes) to have a high probability for the occurrence of cultural resources. Across Eglin 135,000 acres are not required to be surveyed owing to excessive disturbance and low probability for cultural resources. Approximately 132,000 acres of high probability prehistoric and historic survey areas remain to be surveyed on Eglin AFB, much of it in the interstitial areas (U.S. Air Force, 2008a).

As cultural resource studies are periodically being conducted at Eglin AFB to meet Section 110 and Section 106 NHPA obligations, 96 CEG/CEVH is constantly integrating new data into a geographic information system to better define areas containing cultural resources. This specific information is sensitive and 96 CEG/CEVH should be consulted on a need-to-know basis. Until a complete survey of all interstitial areas has been accomplished, the danger of direct physical impact to unknown cultural resources is always a possibility.

4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter analyzes the potential impacts associated with the Interstitial Area training activities described in Chapter 2 on the affected environment (as described in Chapter 3). The analysis examines the potential impacts of each of the proposed alternatives on the following resource areas:

- Soils
- Water Resources
- Air Quality
- Noise
- Chemical Materials
- Biological Resources
- Land Use and Recreation
- Safety
- Socioeconomics
- Cultural Resources

4.2 SOILS

Potential impacts to soils are associated with ground movements (erosion from ground disturbance), the use of munitions, and pyrotechnics resulting from ground disturbance consequential to interstitial training activities. Generally, soils within the affected environment are flat (0 to 5 percent slope) and composed of Lakeland Sand. Depending on the properties and the topography in which they occur, soils have varying degrees of susceptibility to erosion. In general, Lakeland sand is slightly susceptible to water and wind erosion under natural conditions, though nearly all of the sandy soils have a high susceptibility to wind and water erosion when the area is cleared of vegetation. Topography and surface drainage features are another factor to consider when undertaking various activities due to the erosion potential. Soils within the affected environment are fairly level, with very slight rises. As a result, erosion is not expected to be a major concern. However, since Lakeland soils have a moderate potential for erosion, management practices (Appendix B) should be implemented since land disturbance from interstitial activities will be increased and further the potential for erosion.

4.2.1 No Action Alternative

Ground Movements

Under this alternative, the level of training activities would remain the same as defined by the Preferred Alternative in the 1998 *Interstitial PEA* (U.S. Air Force, 1998a). Soil impacts from ground movements were not considered an issue of concern in the original *Interstitial PEA*, but

there is the potential for increased erosion from certain activities in inappropriate locations such as steep slopes. To minimize the potential for increased erosion, ground movements, especially digging and vehicle movements, should be minimized or avoided on steep slopes. All activities should strive to minimize ground disturbance. For activities that require digging, such as the establishment of fighting positions, troops should fill in the holes once they are finished and cover them with pine straw and leaves to minimize erosion potential. Vehicles should remain on established roads at all times except in approved situations. One new area that is particularly vulnerable to erosion (TA D-84) is receiving high intensity usage by 728 TCS Scheduling Support. Activities at TA D-84 should not occur within 100 feet of the shoreline except at established access points. With the implementation of the above measures, impacts to soils from ground movements are anticipated to be minimal.

Munitions and Pyrotechnics Use

Chemical materials from munitions and pyrotechnics have the potential to impact soil quality. Metals and explosive materials from ordnance and ground burst simulators, aluminum from chaff, magnesium from flares, and dyes from smokes are produced by interstitial activities. Munitions-related residue from munitions and pyrotechnics used under the No Action Alternative are discussed in Section 4.6, Chemical Materials. The previous *Interstitial PEA* did not identify any significant impacts to soils as a result of the munitions and pyrotechnics use under this alternative.

4.2.2 Alternative 1

Ground Movements

Under Alternative 1, troop movement on foot would increase by approximately 150 percent as compared to the No Action Alternative; and it was assumed that troop movements by vehicle would increase by a similar amount. However, with the addition of the ALARNG, ARG/MEU, and 7SFG(A) training areas, troop movement would occur over a larger land area. Therefore, troop movement on foot and by vehicles would be reduced in the areas commonly utilized under the No Action Alternative. Use of interstitial areas by each of the new user groups has been analyzed in separate NEPA documents (U.S. Air Force, 2003, U.S. Air Force, 2007b, U.S. Air Force, 2008a). No significant impacts to soils were identified in these associated analyses.

Additionally, to reduce potential impacts to plants and soils from ground training activities, the ALARNG and 7SFG(A) would implement the Integrated Training Area Management (ITAM) Program and rotate use of areas to allow time for plants and soils to recover from impacts (U.S. Air Force, 2007a; U.S. Air Force, 2008a). In general, areas would be scheduled for use and closure on a two-to-one recovery-to-use ratio. For example, if a training area is scheduled for two days of use, it will be closed for the following four days. By allowing time for vegetation and soils to recover, impacts from erosion would be minimized.

Therefore, with the implementation of the management activities listed in Appendix B, potential impacts to soils as a result of ground movements would be minimal. To further reduce any potential impacts, it is recommended that all interstitial user groups schedule use of interstitial training areas utilizing the Integrated Training Area Management (ITAM) Program (use and close training areas on a two-to-one recovery-to-use ratio).

Munitions and Pyrotechnics Use

Ordnance use would increase under Alternative 1, resulting in an overall increase in small-arms use by approximately 655 percent and pyrotechnics use by approximately 400 percent. Table 4-10, Munitions-Related Residue Under Alternative 1, in Section 4.6, Chemical Materials, presents the resulting chemical releases in interstitial areas from implementation of Alternative 1. There would be a significant increase in the potential for ground releases to impact soil quality under this alternative. However, with the addition of the ALARNG, ARG/MEU, and 7SFG(A) training areas these munitions would be distributed throughout a larger land area, thereby reducing the amount of ground releases in concentrated areas.

Over an estimated high use area totaling 96,000 acres of the interstitial area the level of small-arms expenditures would result in about 317.5 milligrams of lead per acre available for deposition onto soil. Based on previous analysis for lead in soil from small-arms projectiles, this level would not pose an ecological concern according to U.S. EPA thresholds (U.S. Air Force, 2004b; U.S. Air Force, 2008a).

Additionally, management activities listed in Appendix B require that munitions cartridges and debris from blanks, chaff, smokes, simulators, and flares be recovered and disposed of in accordance with Eglin AFB operating procedures. These cleanup and disposal procedures would substantially reduce the potential for chemical leaching associated with ground releases to pose significant impacts to soil quality. With the implementation of these management activities, significant impacts to soils from ground releases are not anticipated.

4.2.3 Alternative 2

Ground Movements

Implementation of Alternative 2 involves the same types of training activities in the same training areas as under Alternative 1. However, under Alternative 2, there would be a 300 percent increase in the level of ground training. This increase in troop movements and other ground training activities also increases the potential for impacts to soils, such as erosion. All activities occurring in the interstitial area, especially those occurring in sensitive areas such as steep slopes and TA D-51 as described under the No Action Alternative, should be minimized to reduce potential impacts to soils and erosion from ground disturbance. The ALARNG and 7SFG(A) would continue to implement the Integrated Training Area Management (ITAM) Program to allow training areas to recover from potential impacts.

With the implementation of the management requirements in Appendix B and the additional management activities discussed under Alternative 1, impacts to soils from ground movements under Alternative 2 would not be significant.

Munitions and Pyrotechnics Use

Under Alternative 2 there would be a 300 percent increase in interstitial training activities over those discussed under Alternative 1; however, the same training areas would be used. The resulting chemical releases under Alternative 2 are provided in the Chemical Materials section (Section 4.6) in Table 4-13. If evenly deposited over the estimated high use area of 96,000 acres,

the amount of lead per acre would be approximately 1,224.7 milligrams. This level would not pose an ecological concern according to U.S. EPA thresholds based on previous analysis for lead in soil from small-arms projectiles (U.S. Air Force, 2004b; U.S. Air Force, 2008a).

4.3 WATER RESOURCES

Analysis of potential impacts to water resources from interstitial area activities considers effectors, impact pathways and likelihood of different military actions to affect surface waters, groundwater, wetlands and floodplains. Effectors are those mechanisms with the potential to have some impact on water resources and are related to the basic mission elements of troop movement, vehicle movement, assault zone use, small-arms blank ammunition use, bivouacking, and use of smokes and ordnance. Pathways, the connection between the effector and the resource, can be airborne or waterborne transmission or direct physical disturbance. Likelihood of effect is the probability that an impact would occur and is based on factors such as proximity to the resource, frequency of the action, and environmental characteristics that either serve to facilitate or suppress the impact. Problems in determining potential impacts are a lack of detail regarding the activity and a lack of monitoring data. General information is available about how, when, and where these activities occur, but specific information for some activities is not recorded, such as the distance from and number of smoke grenades or ground burst simulators expended in relation to a specific surface water. Because it would be very difficult to track and record details of all interstitial area missions, the Air Force has established some management practices that units must follow to minimize the impact of their actions to water resources. These measures are preventative in nature, and greatly restrict the pathway and decrease the likelihood for mission elements to directly affect water resources. These management practices, previously discussed in Chapter 2, include buffers between the activity and the water resource, water use limits, prohibiting physical alterations to surface waters, resource avoidance and clean up.

The analysis that follows is presented in the context of the current known condition of the watershed in which the actions take place. Chapter 3 listed FDEP watershed basins, water quality status of the basins, and interstitial area user groups already active in those areas. Table 4-1 below briefly identifies the potential for and likelihood of effects to surface waters, groundwater, wetlands and floodplains.

Table 4-1. Potential for Mission Elements to Affect Water Resources

| Impact | Troop Movement on Foot | Troop Movement by Vehicle | Bivouac Use | Assault Zone Use | | | Ordnance | | | Smokes | |
|--|---|---|---|--|--|--|--|------------|------------------------|--------|--|
| | | | | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | Ground Burst Simulator | | |
| <i>Surface Water course/flow could be directly altered</i> | Not Likely. The action lacks sufficient disturbance to achieve this effect. | Minor potential. With one exception (Special Tactics units), vehicles are required to stay on roads. | Not Likely. Bivouac areas are established at least 100 feet away from streams and/or sloped areas. | Potential. Eroding soil from existing assault zones could enter streams affecting the flow. | | | | | | | |
| <i>Surface Water quality could be indirectly affected by erosion</i> | Potential, but on a minor scale. Assumed to occur on some level. Existing best management practices discourage large troop movements along sloped areas, but large is not defined. Some troop movement along slopes and through wetlands is therefore a safe assumption. | Likely and occurring. Road use particularly in areas of sloped terrain and at stream crossings can result in eroded sand and sediments being transported into surface waters. As levels of use increase, so will the potential for erosion as road conditions deteriorate. Wind and rain are the primary transport mechanisms. | | Potential. Eroding soil from existing assault zones could enter streams increasing turbidity (temporary) especially in conjunction with storm events. | | | | | | | |
| <i>Surface Water quality could be affected by contaminants</i> | No Potential. | Minor potential. Most vehicles are required to stay on roads and/or use designated stream crossings. Some contamination from leaks could occur. | Not Likely. Units are required to contain and dispose off site gray water and waste. | Potential. Refueling operations carry a risk of petroleum spills, which could be transported to surface waters via stormwater runoff. | Not Likely. Blank use produces emissions and a brass cartridge. The brass cartridge is resistant to corrosion, not especially toxic as far as metals go, and is supposed to be picked up by units. The emissions, including lead, come from the bullet propellant produced at the time of firing. These emissions linger for a brief time in the air and then disperse. Conditions such as rain or other precipitation could cause deposition of emission byproducts into surface waters. It is unlikely that sufficient quantities of small-arms propellant emissions would be produced and deposited in concentrations to adversely affect water quality. | Not Likely. At the time of detonation, explosive forces produce heat, explosive emissions, and propel dirt and debris. The existing best management practice requirement to be at least 100 feet away from surface water prevents or greatly minimizes the potential for dirt, debris and emissions to settle on surface water. | Minor potential. Smokes exhibit acute toxicity to animals and people via inhalation; they have not been identified as an aquatic concern. Dye components are used in aquifer studies. | | | | |

Table 4-1. Potential for Mission Elements to Affect Water Resources, Cont'd

| Impact | Troop Movement on Foot | Troop Movement by Vehicle | Bivouac Use | Assault Zone Use | | | Ordnance | | | Smokes |
|--|--|---|--|--|---|---|---|--|------------------------|--------|
| | | | | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | Ground Burst Simulator | |
| <i>Groundwater quality could be affected by contaminants</i> | Not likely. Troop movements do not involve expenditure of items, other than those addressed as ordnance and smokes, which are discussed as a separate effector. | Minor potential. All vehicles have some potential for miscellaneous leaks and spills. Most vehicle maintenance occurs within cantonment areas at designated maintenance locations. | Likely. Rainfall can transport human waste downward into groundwater, which can then migrate laterally to surface waters. Existing best management practices state that bivouac sites that include kitchens and latrines are to be established at least 200 feet away from any stream. This precludes any direct impacts; however, USFWS guidelines for minimizing indirect effects to streams from contaminants are conducting the action 0.25 miles away. Since this is not realistic for interstitial area training scenarios, there is a likely chance of some contamination occurring. | Potential. It is assumed that refueling operations occur at landing zones. Rainfall can transport contaminants downward into groundwater. Lateral transport into surface waters is then possible. | Potential. Rainfall can transport airborne emission contaminants from blank ordnance, including lead, downward into groundwater. | Potential. Ground burst simulators are a source of perchlorate. USEPA identified the perch ion (ClO_4^-) as a contaminant of concern due to its high solubility, persistence in the environment, and potential effects on human health. USEPA set the drinking water Equivalent Level at 24 parts per billion. The Army is taking steps to eliminate this component from its ground burst simulators, trip flares, and the like. Should have perchlorate-free simulators by 2009. | Not likely. Direct contact with groundwater is unlikely. C-4 amounts are generally small. Large craters and exposure of water table is not expected. | Minor potential. Smokes exhibit acute toxicity to animals and people via inhalation; they have not been identified as an aquatic concern. Dye components are used in aquifer studies. | | |

Table 4-1. Potential for Mission Elements to Affect Water Resources, Cont'd

| Impact | Troop Movement on Foot | Troop Movement by Vehicle | Bivouac Use | Assault Zone Use | | | Ordnance | | | Smokes |
|---|--|--|--|---|----|----|-------------------|------------|------------------------|-------------------|
| | | | | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | Ground Burst Simulator | |
| <i>Water flow to wetlands could be interrupted or altered</i> | Not likely. Ground disturbance from this activity is not substantial enough to alter surface water or wetland water flow. | Likely , already occurring. | Not likely. No digging is allowed in wetlands. | No direct effects since new LZs/HLZs are not proposed. Indirectly, erosion from these sites could cause localized filling and redirection/rate of flow change. Interruption of flow is unlikely. | | | No Effect. | | | No Effect. |
| <i>Floodplain topography could be altered</i> | Not likely. Ground disturbance from this activity is not substantial enough to alter surface topography and effect changes to the floodplain. | Likely , already occurring, but on a localized scale. | Not likely. Digging is limited to small holes which are refilled. Floodplain topography would not be altered. | Similar to above, no direct effects. Indirectly, some alteration to topography is likely from erosion. No habitable structures are located within the interstitial area. | | | No Effect. | | | No Effect. |

DZ = drop zone; HLZ = helicopter landing zone; LZ = landing zone; USEPA = U.S. Environmental Protection Agency; USFWS = U.S. Fish and Wildlife Service

4.3.1 No Action Alternative

The No Action Alternative represents the current approved level of mission activity in the interstitial areas as described in the *1998 Interstitial PEA* (U.S. Air Force, 1998a) and as presented in Chapter 2, Table 2-1 of this REA.

Major user groups Army Rangers and HAVE ACE conducted missions primarily in the western third of Eglin Reservation.

Troop Movement on Foot

The effectors for this activity consist of groups of personnel conducting training missions on foot in the interstitial area. Foot traffic in itself is not particularly impactive to water resources, particularly for occasional small groups. Some situations may arise where repeated foot traffic of large groups of people on a sloped area could lead to increased erosion and sedimentation of a stream.

Potential effects from troop movement to surface waters would be direct, but on a minor scale, particularly for small groups. Large groups or heavy repeated use of a particular area can cause stream banks or shorelines to erode, indirectly affecting water clarity, stream course, and rate of flow. Troop movement in wetlands can directly affect these areas, especially with repeated use or large groups traversing through soft, wet sediments. There is no mechanism or pathway for troop movement to affect the floodplain or groundwater to any appreciable degree. Additionally, there are no occupied structures within the study area, and thus no risk of impact from changes in floodplain elevation.

There is no likelihood for troop movement on foot to affect groundwater. Impacts to surface waters are likely, but on a minor scale. Disturbance would be limited to localized disturbance of stream beds and shorelines of surface waters, which can temporarily suspend sediments and diminish water clarity. The fast-flowing streams typical of the study area would return to their former state once units had moved on. Sediments would settle rapidly and water clarity would return. The likelihood of major impacts is controlled by the requirement the Air Force has imposed on interstitial area units to avoid steep slopes, where the potential for erosion is high. Units have also been instructed to recognize and avoid wetlands. There is no likelihood for troops on foot to affect floodplains. The Air Force has instructed interstitial area users to not dam, alter, or physically modify any stream or river.

Troop Movement by Vehicles

Effectors for troop movement by vehicle include the vehicles themselves, and leaks and spills from petroleum products.

Pathways for vehicles to affect surface waters, wetlands, and floodplains include direct physical alterations to stream beds and shorelines, indirect effects to water quality from erosion of roads and through stormwater transport of eroded sediments, direct and indirect impacts to surface waters from leaks, spills, and field maintenance of vehicles. These leaks and spills can move downward through the permeable sandy soils of the interstitial area to contaminate groundwater.

Because there is a real likelihood vehicles would directly have major impacts on stream beds and wetland areas, units, with the exception of Special Tactics units, were primarily restricted to existing roads. For permitted Special Tactics units off-road vehicle use, vehicles must traverse streams only at designated crossing points, and otherwise must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams. Special Tactics unit vehicles must also avoid driving in wetlands. Indirectly, use of the extensive dirt road system running throughout the interstitial area contributes to roadway erosion, a recognized problem affecting some streams. Leaks or spills associated with normal vehicle operation and refueling is likely and assumed to have some effect on groundwater. As a matter of practicality, vehicles stay out of wetlands to avoid getting stuck. Some indirect effects to wetlands from roadway erosion are likely and assumed to occur. Road erosion is unlikely to have more than a minor effect on the floodplain.

Small Arms Use

Small-arms round emissions can irritate users, but have not been identified as a potential water quality concern. Historically, primer components contained mercury in the form of mercury fulminate, but this compound has not been used in military blank ammunition for over 50 years (Leopold, 2002). FDEP basin assessments identified mercury as a concern in some basins of the Yellow River, but the source is apparently not related to interstitial area activities. Known and more likely sources of mercury include coal-fired power plants; pulp and paper mills; copper, lead and zinc smelting; landfills; and sewage sludge incineration (Leopold, 2002).

Assault Zone Use

Eighty-one of the 105 assault zones in the interstitial area have highly erodible soil types. Thirty-six are located within 500 feet of surface waters. Indirectly, surface waters could potentially be affected from eroding soil from assault zones. Changes in flow rate and course alteration can result as eroded sediments enter streams. However, the condition of assault zones with respect to eroded condition is unknown. Important factors to incorporate into the consideration of potential impacts are that the majority of HLZs are flat and vegetated, which limits the rate of water runoff. The few unpaved LZs, which can accommodate fixed wing aircraft, would be most prone to windborne dust and sediment transport, but an assessment of these LZs has not been completed. Another effector to consider is the act of refueling. Refueling at assault zones carries a risk of fuel spills, and thus a potential for indirect impacts to surface and groundwater. Spill event information for assault zones and interstitial area activities in general is unknown. Thus, the potential can only be assumed to be present for the No Action Alternative.

Bivouac Use

Effectors for bivouac use to affect surface waters, groundwater and wetlands include water consumption, waste generation, and wastewater disposal. Water consumption results on a direct removal of water from creeks and streams. For small units, the impacts are negligible. To prevent large draw downs of water by larger units, the Air Force has limited bivouac water consumption to 500 gallons per day. Bivouacs are typically set up on high ground away from low areas such as wetlands. Thus, the likelihood for this activity to affect wetlands is very low.

Ordnance

Effectors for ordnance use include ground burst simulators, grenade simulators and C4 explosive. The primary issue analyzed is ground burst simulator use, since these devices are known to contain perchlorate and outnumber other ordnance items in terms of frequency of use. Perchlorate has been identified by the EPA as a drinking water contaminant and human health concern primarily for its tendency to persist once in groundwater. Degradation in surface water is fairly rapid, on the order of a few weeks, as indicated by one study which analyzed perchlorate concentrations in a lake following a large fireworks display (Wilkin et al, 2007). The persistence in groundwater is attributed to a lack of microbial activity, which in surface waters such as ponds and lakes, is responsible for degrading this compound (Wilkin et al., 2007).

The pathway or mechanism for effect is indirect transport by water or wind after a simulator is detonated. Most of the perchlorate is consumed upon detonation, but a fraction will remain and be dispersed in airborne emissions (GeoSyntech Consultants, 2005). Direct impacts are not anticipated as the Air Force has established a minimum buffer away from surface waters for deploying this item. Perchlorate is mobile in soil and thus can travel downward to groundwater. Encounter with clayey soils will slow or stop downward progress, impeding access to the Floridan aquifer, the source of most potable water in the study area. The most likely risk of contamination would therefore be to groundwater in the Surficial, or Sand and Gravel aquifer, which is nearer to the surface. Once entrained, perchlorate could potentially move laterally through soil into surface waters. The likelihood of perchlorate from simulators ending up in soil and groundwater is therefore probable but on a very small scale. Based on air emissions calculations provided in Section 4.4, Air Quality, the total amount of perchlorate for the No Action Alternative is 0.12 pound for all interstitial area expenditure sources, not just the 5,000-plus simulators. This amount (0.12 pounds) would be dispersed over a large area of several thousand acres and over several events throughout the course of a year. Given that natural microbial activity will likely degrade most of this compound, perchlorate from ground burst simulators would not have significant adverse impacts to groundwater.

There is a current FWS guideline of 0.25 miles between a given activity and a surface water to prevent contact from some contaminant. The 0.25 mile guideline is not part of any current Air Force BMP.

Smokes

Some smoke grenade dyes are water soluble and persistent, rapidly photodegrading only up to a certain point (Adams et al., 1994). Because of their water solubility, some dye classes, azos and anthroquinones, also found in red and violet M-18 smoke grenades, are used in aquifer dye tracer studies. Even though these dyes are used to study groundwater, the Army recognizes their toxicity and is working to replace formulations with sugar-based compositions. The red and violet smoke grenades are proving less adaptable to the sugar-based formulations. The yellow and green grenades with the new formulation are already in use (Taylor, 2007). Smoke grenade use for some areas of the interstitial area was analyzed in the *Estuarine and Riverine Areas Programmatic Environmental Assessment* (U.S. Air Force, 2004). Yellow dye types used in smoke grenades have limited solubility, which means that only a small amount of the dye will dissolve in water and the rest will remain as solid particles. The solubility of the smoke grenade

dye solvent yellow 33 ranges from 0.089 mg/L (89 parts per billion) at a temperature of 12 °C to 0.18 mg/L (180 parts per billion) at 22° C, a range of concentrations that does not detrimentally affect water quality.

4.3.2 Alternative 1

Under Alternative 1, major user group Army Rangers project somewhat fewer personnel than the No Action Alternative, but propose an additional expenditure of 2,740,340 rounds of small-arms blank ammunition. The difference in use of ground burst simulators by all user groups is an increase of 25,734 simulators, from 5,172 for the No Action Alternative to 30,906 for Alternative 1. Overall, personnel using the interstitial area increases to a volume 2.5 times that of the No Action, from 167,496 to 421,637 people-days per year as a result of new user groups.

Troop Movement on Foot

As with the No Action Alternative, the mechanisms for impact from this activity are minor for surface waters and wetlands, and nonexistent for groundwater and floodplains. The volume in personnel increase, though large in terms of people-days per year, can be placed into perspective. Dividing the number of people per day per year (421,637) by the number of days in a year (365), yields an average number of people on the Range each day. For Alternative 1, this equates to about 1,155 persons each day, and a density of 0.012 persons per acre for an area of 96,000 acres. This level of troop movement should not directly or indirectly affect water resources.

Troop Movement by Vehicle

Under Alternative 1, more units would be allowed to travel off-road, and a much greater number of vehicles would be in use throughout the interstitial area. Though the effectors and pathways for effect are the same for this alternative as for the No Action Alternative, the degree and potential of impact would increase. Water quality impacts from soil erosion would be potentially severe for those areas already undergoing substantial erosion. The increased number of vehicles, primarily along established dirt roads, would lead to more road wear, maintenance, and potential erosion issues for these areas. Specific areas are not identified in this Interstitial Area REA, but will be identified and analyzed in greater detail in other analysis documents specific to Eglin interstitial area roads.

Assault Zone Use

An increase in assault zone use under Alternative 1 would result in potential increases in effects to surface waters from erosion at some unpaved LZs, and from spills and leaks during refueling.

Bivouac

Bivouac use is a fairly regulated activity in terms of Air Force requirements placed on units. Air Force guidance and management practices currently in place limit water consumption and require that units collect waste and cite bivouacs out of wetlands and away from streams. Increases in bivouac activity under Alternative 1 would not pose a significant risk to water resources, assuming all management practices are observed.

Small Arms

In addition to small arms increases from Army Ranger training, Alternative 1 considers the addition of Navy ARG/MEU training, for which maximum small-arms expenditures are about 970,000 rounds. ARG/MEU Training and Army Ranger western Eglin Reservation training areas overlap. Another major increase in small arms over the No Action is the proposed 7SFG(A) training, which accounts for the bulk of small-arms expenditures within the eastern half of the Eglin Reservation, totaling 1,134,720 rounds. Lead analyzed from interstitial area expenditures is strictly from airborne emissions from blank ammunition use. For Alternative 1, approximately 64 pounds of lead would be emitted as a result of small-arm round propellant combustion (see Section 4.4, Air Quality for methodology). Once airborne, emissions can be deposited on soil and surface waters. Over an estimated high-use area totaling 96,000 acres of the interstitial area, the level of small-arms expenditures would result in about 317.5 milligrams per acre available for deposition onto soil and surface waters. Based on previous analysis for lead in soil from small-arms projectiles, this level would not pose an ecological concern according to U.S. EPA thresholds (U.S. Air Force, 2004b; U.S. Air Force, 2008a). The potential still exists for lead to migrate into surface waters from erosion of soil that contains this particulate metal (Agency for Toxic Substances and Disease Registry [ATSDR], 2005), though downward migration through permeable Lakeland soils is more likely. Lead leached into groundwater may eventually reach surface waters. However, the risk to surface waters is assumed to be minimal if the lead source is more than 0.25 mile away (USFWS, 2008).

Ordnance

The potential for effects to groundwater from simulator components would increase, but should remain low under this alternative. The Army recognizes that perchlorate is an issue and has stated it will remove this component from their simulators by 2009 (Hartley et al, 2007). It is possible that any increase in activity proposed for this alternative would not occur until after then. FDEP basin assessments for those areas in the interstitial area heavily used by Army units did not cite perchlorate as a concern, but it is unknown if sampling for this compound has ever been conducted.

Smokes

Smoke use would increase from about 4,000 items expended to 11,439. As with the No Action Alternative, smoke grenade dyes are considered here for their potential to affect surface and groundwater quality. As discussed under the No Action Alternative, the solubility properties of yellow dye make it more likely to remain as a solid particle rather than dissolve in water and become a drinking water or water contaminant concern. Additionally, this dye is being reformulated using a less-toxic sugar base. Red and violet smoke grenades still contain dyes that are soluble in water. Thus, this alternative would have an increased potential for surface water effects from the use of red and yellow M-18 smoke grenades.

4.3.3 Alternative 2

Troop Movement on Foot

Under Alternative 2, the people-days per year would increase to 1,691,548. This represents an average of number of 4,634 persons per day on the Range. If the assumption is made that about one-quarter of the available interstitial area is high use or frequent use, with available land of approximately 96,000 acres, the actual density of persons in this area would be about two people per 50 acres. This amount of foot traffic would not have major effect on surface waters and wetlands, and would have no effect on groundwater and floodplains.

Troop Movement by Vehicle

Under Alternative 2, more units would be allowed to travel off-road, and a much greater number of vehicles would be in use throughout the interstitial area. Though the effectors and pathways for effect are the same for this alternative as for the No Action Alternative and Alternative 1, the degree and potential of impact would increase as vehicle use increased by 300 percent. As with the No Action Alternative and Alternative 1, those areas presently undergoing some type of erosion could be worsened and new problem areas could arise with the increase in off-road activity. Water quality impacts from soil erosion would be potentially severe for those areas already undergoing substantial erosion. The increases in vehicles primarily along established dirt roads would lead to more road wear, maintenance, and potential erosion issues for these areas. Specific areas are not identified in this Interstitial Area REA, but will be identified and analyzed in greater detail in other analysis documents specific to Eglin interstitial area roads.

Bivouac

Alternative 2 would result in an increase in bivouac activity. As with the No Action Alternative and Alternative 1, the potential for this activity to affect surface water and wetlands is low due to preventative measures already in place. There is no potential for this activity to affect groundwater or alter the floodplain.

Assault Zone Use

Though specific locations are not available, Alternative 2 would likely result in some increase in erosion at some nonpaved LZs, potentially affecting nearby surface waters. The potential for leaks and spills during refueling would increase under this alternative.

Small Arms

This alternative would potentially result in the amount of airborne lead emissions available for deposition into surface waters and wetlands of 257 pounds per year. If evenly deposited over an area of 96,000 acres the amount of lead per acre would be approximately 1,224.7 milligrams. Based on previous analysis for lead in soil from small-arms projectiles, this level would not pose an ecological concern according to USEPA thresholds (U.S. Air Force, 2004b; U.S. Air Force, 2008a). Because of its tendency to bind to soil this lead would become primarily a soil toxicity and biological concern, rather than a water resource concern.

Ordnance

Alternative 2 would release from 123,624 simulator items approximately 2.47 pounds of perchlorate into the interstitial area. Interstitial area use tends to be concentrated in certain areas of the Range, which for the purposes of analysis is estimated roughly at one quarter of the total available land area. Thus, expenditure of most simulator items is assumed to occur within an area of about 96,000 acres. In particular, the area along the Yellow River is heavily and regularly used. Thus, this water body and streams that drain into it are most likely to have some exposure to perchlorate, but on a minor scale. Assuming equal distribution over the 96,000 acre area, amounts of perchlorate would be about 12 milligrams per acre. The USEPA drinking water equivalent is 24 parts per billion (Hartley et al, 2007). For this alternative, a volume of water of only a few hundred gallons is needed to dilute 12 milligrams of perchlorate to meet acceptable EPA standards. Degradation would remove some of the perchlorate before it could reach groundwater. Thus, the wide area of dispersal, mechanisms for degradation, and the low amount of perchlorate released indicate that risk of groundwater contamination is low from this alternative. It is important to note that implementation of this alternative and the proposed increase in use would likely occur after 2009, when simulators would contain non-perchlorate formulations.

Smokes

Under this alternative, smoke grenade use would increase to over 32,000 items expended. As discussed under the No Action Alternative and Alternative 1, red and violet formulations are more water-soluble and pose some potential for effect to surface water quality. Yellow and green smoke grenade dye formulations have been reworked to less toxic forms. The older formulations were not very soluble and, thus, less of a water quality concern.

4.4 AIR QUALITY

The air quality analysis focuses on emissions from munitions use, vehicle emissions, and particulate matter from driving on unpaved roads within the training areas. Air quality emissions are compared to the ROI consisting of Okaloosa, Santa Rosa, and Walton Counties.

4.4.1 No Action Alternative

Under the No Action Alternative the interstitial activities would continue without change. The magnitude and significance of a pollutant concentration is determined by comparison with federal air quality standards. These standards represent the maximum allowable concentrations of various pollutants that may be present, while still protecting public health and welfare with a reasonable margin of safety. The National Ambient Air Quality Standards (NAAQS) are federal standards that have been established by the U.S. Environmental Protection Agency. The NAAQS address six criteria pollutants, and the maximum allowable concentrations for ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), and lead (Pb) (40 CFR § 50-51).

Using a “closed box assessment” (CBA) short-term impacts can be estimated from various emissions types in a given area of space. Air emissions from the current training activities were

analyzed in the *Interstitial Area Environmental Baseline Document, Revision 1*. The results of the CBA compare the estimated emissions to the NAAQS on a percentage basis (Table 4-2).

Table 4-2. No Action Alternative CBA Air Emissions Compared to the NAAQS

| Criteria Pollutant | Averaging Time | NAAQS | Calculated Concentration ($\mu\text{g}/\text{m}^3$) | Percent of Standard |
|--------------------|----------------|------------------------------|---|---------------------|
| CO | 1-Hour | 35 ppm | 0.0373 | 0.0001% |
| | 8-Hour | 9 ppm | 0.0261 | 0.0003% |
| NO _x | Annual | 0.053 ppm | 0.0006 | 0.0006% |
| SO ₂ | 3-Hour | 0.5 ppm | 0.0099 | 0.0008% |
| | 24-Hour | 0.14 ppm | 0.0044 | 0.0012% |
| | Annual | 0.03 ppm | 0.0009 | 0.0011% |
| PM ₁₀ | 24-Hour | 150 $\mu\text{g}/\text{m}^3$ | 0.2197 | 0.15% |
| | Annual | 50 $\mu\text{g}/\text{m}^3$ | 0.0439 | 0.09% |

Source: U.S. Air Force, 2005a

ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter of less than or equal to 10 microns; SO₂ = sulfur dioxide

4.4.2 Alternative 1

Under Alternative 1, the current level of activity plus the reasonably foreseeable future use are considered in the analysis. Emissions from vehicles, unpaved roads emissions of particulate matter, and munitions emissions were analyzed and compared to the NAAQS using a CBA and are also compared to Okaloosa, Santa Rosa, and Walton Counties emissions as recorded in the *National Emissions Inventory* (USEPA, 2002). Table 4-3 summarizes emissions from the CBA. Emissions from the activities in this alternative would cause minimal emissions as compared to the NAAQS. The highest emission would be from the 24-hour particulate matter emission at 0.13 percent of the standard. Carbon monoxide emissions would be emitted the most at 0.11 percent as compared to regional air emissions (Table 4-4). No air quality impacts are expected for Alternative 1.

Table 4-3. Alternative 1 CBA Air Emissions Compared to the NAAQS

| Criteria Pollutant | Averaging Time | NAAQS | Calculated Concentration ($\mu\text{g}/\text{m}^3$) | Percent of Standard |
|--------------------|----------------|------------------------------|---|---------------------|
| CO | 1-Hour | 35 ppm | 2.2690 | 0.0057% |
| | 8-Hour | 9 ppm | 1.5883 | 0.0159% |
| NO _x | Annual | 0.053 ppm | 0.0381 | 0.0381% |
| SO ₂ | 3-Hour | 0.5 ppm | 0.0252 | 0.0019% |
| | 24-Hour | 0.14 ppm | 0.0112 | 0.0031% |
| | Annual | 0.03 ppm | 0.0022 | 0.0028% |
| PM ₁₀ | 24-Hour | 150 $\mu\text{g}/\text{m}^3$ | 0.1906 | 0.1271% |
| | Annual | 50 $\mu\text{g}/\text{m}^3$ | 0.0381 | 0.0762% |

ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter of less than or equal to 10 microns; VOC = volatile organic compound

The increased use of pyrotechnics means there is more potential for wildfires to occur. Wildfires are not a regulated air emission source and were not considered in the applicability determination

of Eglin AFB Title V permit. Wildfires cause temporary increases in emissions and these are reported in Eglin AFB Annual Air Emissions Inventory. The increase in training activities may cause more wildfires, subsequently causing increased emissions annually. Increase in wildfires would temporarily cause increased emissions and impact to the local air quality.

Table 4-4. Alternative 1 Emissions Compared to the ROI Emissions

| | Emissions (tons/yr) | | | | |
|-------------------------|---------------------|-----------------|--------|-----------------|--------|
| | CO | NO _x | PM | SO _x | VOCs |
| ROI | 150,219 | 22,909 | 30,829 | 4,097 | 23,742 |
| Alternative 1 Emissions | 159.32 | 18.97 | 20.23 | 0.84 | 18.21 |
| Percent ROI | 0.11% | 0.08% | 0.07% | 0.02% | 0.08% |

CO = carbon monoxide; NO_x = nitrogen oxides; PM = particulate matter; ROI = region of influence; SO_x = sulfur oxides; VOC = volatile organic compound

4.4.3 Alternative 2

Alternative 2 analyzes the emissions expected from the activities in Alternative 1 with a 300 percent increase. Emissions from the increased activities are well within the federal NAAQS (Table 4-5). Emissions from the interstitial training activities with a 300 percent increase would pose insignificant emissions to the region (Table 4-6). No adverse impacts to regional air quality are expected for Alternative 2.

Table 4-5. Alternative 2 CBA Air Emissions Compared to the NAAQS

| Criteria Pollutant | Averaging Time | NAAQS | Calculated Concentration ($\mu\text{g}/\text{m}^3$) | Percent of Standard |
|--------------------|----------------|------------------------------|---|---------------------|
| CO | 1-Hour | 35 ppm | 2.8673 | 0.0072% |
| | 8-Hour | 9 ppm | 2.0071 | 0.0201% |
| NO _x | Annual | 0.053 ppm | 0.0273 | 0.0273% |
| SO ₂ | 3-Hour | 0.5 ppm | 0.0136 | 0.0010% |
| | 24-Hour | 0.14 ppm | 0.0060 | 0.0017% |
| | Annual | 0.03 ppm | 0.0012 | 0.0015% |
| PM ₁₀ | 24-Hour | 150 $\mu\text{g}/\text{m}^3$ | 0.1447 | 0.0965% |
| | Annual | 50 $\mu\text{g}/\text{m}^3$ | 0.0289 | 0.0579% |

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter less than or equal to 10 microns; ppm = parts per million; SO₂ = sulfur dioxide; VOC = volatile organic compound

Table 4-6. Alternative 2 Emissions Compared to the ROI Emissions

| | Emissions (tons/yr) | | | | |
|-------------------------|---------------------|-----------------|--------|-----------------|--------|
| | CO | NO _x | PM | SO _x | VOCs |
| ROI | 150,219 | 22,909 | 30,829 | 4,097 | 23,742 |
| Alternative 2 Emissions | 477.97 | 56.90 | 60.81 | 2.51 | 54.63 |
| Percent ROI | 0.32% | 0.25% | 0.20% | 0.06% | 0.23% |

CO = carbon monoxide; NO_x = nitrogen oxides; PM = particulate matter; ROI = region of influence; SO_x = sulfur oxides; VOC = volatile organic compound

4.4.4 Summary

Training activities in the interstitial area would cause minimal impacts to the air quality of the region. This is due to the fact that the emissions from munitions, vehicles, and unpaved roads would be sporadic and over a large land area; therefore, the emissions would have little affect on the air quality of Okaloosa, Santa Rosa, and Walton Counties. Emissions would not exceed the federal NAAQS or the 10 percent criterion presented in Section 3.3 for Alternative 1, Alternative 2, and the No Action Alternative. No adverse impacts to air quality are expected.

4.5 NOISE

This section discusses the proposed activities and the effects on human receptors and sensitive species that may be affected by the interstitial activities. The *Interstitial Area Environmental Baseline Document, Revision 1* discusses in detail the impacts of noise from these activities. Noise was previously analyzed in separate documents for the ALARNG (U.S. Air Force, 2007a) and 7SFG(A) (U.S. Air Force, 2008a); therefore, only a brief summary of the results are presented in this document.

4.5.1 No Action Alternative

In the No Action Alternative, noise from ground movements, munitions use, and aircraft operations would continue. As stated in the *Interstitial Area EBD, Revision 1*, impacts to people are not expected from minimal vehicle use associated with interstitial missions. The use of small arms during interstitial activities would not affect the public as long as activities maintain a 4,000-foot buffer between the Eglin Reservation boundary and the activities. Helicopters would be used primarily at and around the landing strips, LZs, and DZs. Average helicopter noise was found to be low level and would have little effect on human receptors.

4.5.2 Alternative 1

This alternative includes the current level of activity plus foreseeable future activities, including the expansion of the ALARNG training activities, increase in the U.S. Army 6th Ranger Training Battalion training, and ground training associated with the 7SFG(A). The additional training activities would mean larger numbers of people moving through the interstitial areas either on foot or by vehicle and an increase in munitions. As stated in the No Action Alternative, the current activities would not cause noise impacts to the public as long as a 4,000-foot buffer is maintained.

Maximum munitions noise levels from 7SFG(A) activities as reported in the Eglin BRAC EIS are summarized in Table 4-7. There are no known sensitive receptors in the affected acres from small-arms noise. Acreage that would be impacted by large arms includes 43 acres of privately owned land north of Choctawhatchee Bay and immediately south of Eglin Range. Of the 43 acres affected by greater than 62 dB CDNL, 31 acres are residential and considered sensitive receptors. Residents living in this area would notice an increase in munitions noise and this noise may cause limited to moderate annoyance to residents in these areas.

Table 4-7. 7SFG(A) Munitions Noise

| Munitions | Sound Level | Affected Acres |
|------------|----------------|----------------|
| Small arms | >65 dB DNL | 5,073 |
| | >87 PK 15(met) | 39,562 |
| Large arms | >62 dB CDNL | 29,075 |
| | >70 dB CDNL | 9,931 |

Source: U.S. Air Force, 2008a

> = greater than; dB DNL = A-weighted day-night level;
 PK 15(met) = peak noise exceeded by 15 percent of the firing events;
 dB CDNL = C-weighted day-night level

The 7SFG(A) would utilize high mobility multipurpose wheeled vehicles (HMMWVs), all-terrain vehicles (ATVs), zodiac boats (rubber raiding craft), and assorted other military vehicles. These operations would be similar to activities currently occurring on the Range and in nearby water bodies. Also, rotary and fixed wing aircraft would be utilized by the 7SFG(A). These aircraft would not be assigned to the 7SFG(A); they would only use the Air Force Special Operations Command aircraft already operating in the area. These operations would be similar to activities currently ongoing on the Range. Although there would be night operations, these would be distributed over large areas. Noise impacts due to 7SFG(A) vehicle operations are not expected.

The ALARNG would utilize vehicles and small arms which would cause impulse noise and transportation noise during training activities on land west of Highway 87. Vehicle noise levels would create noise levels less than 65 dBA at 500 feet and munitions noise levels would be up to 62 dBC at 1,000 feet from the training activity (U.S. Air Force, 2007a). Impacts from ALARNG training noise are not expected.

Limited to moderate annoyance may occur from 7SFG(A) training; other noise impacts are not expected for Alternative 1.

4.5.3 Alternative 2

Under Alternative 2, the same activities as discussed in Alternative 1 would occur with a 300 percent increase in activities and expendables. The effect on the sound environment would be increased periods of elevated noise from vehicles, troops, and munitions. The number of receptors along the Eglin Range boundaries is sparse and the training activities occurring within the Range would be dispersed over large areas of land. Thus, the increased activity would cause increased frequency of vehicle and munitions noise, but with the use of a 4,000-foot buffer, this noise is not expected to be perceived off Eglin Range.

The residents located within the acres affected by noise from the 7SFG(A) activities would experience more frequent elevated noise levels. This may cause moderate annoyance to residents. The ALARNG activities would also increase. By extending the buffer along the western edge of the Eglin Range from 1,000 feet to 3,000 feet, ALARNG training activities would not adversely affect the public.

Moderate annoyance may occur to residents affected by the 7SFG(A) large arms activities. With the described management practices employed, the public would not be adversely impacted by activities in Alternative 2.

4.5.4 Summary

The large area in the interstitial area in which the user groups would be operating would disperse the noise from vehicle and munitions use and remain primarily within the Eglin Range boundaries. A buffer of 4,000 feet is suggested to decrease potential for noise impacts to the public. In Alternative 1, the addition of the ALARNG training would not cause impacts to the public as it would be occurring well within the Range boundaries and the munitions noise is below 62 dBC beyond 1,000 feet of the activity. Depending on the alternative selected from the Eglin BRAC EIS, some of the large arms noise from the 7SFG(A) activities may cause elevated impulse noise to off-base residents, causing limited to moderate annoyance. The case presented in this document is the worst case scenario. Increased activities under Alternative 2 would increase the frequency of the noise events and the intensity of the noise moderately. It is expected that the noise would be dispersed over large land areas and thus would not affect the public when the maintenance requirements are utilized.

4.6 CHEMICAL MATERIALS

The potential environmental impact of hazardous materials and waste were assessed as they pertain to debris from ground troop movement, chemical materials from ordnance, and ERP and LDP sites for training activities within the interstitial area. Only debris and chemical materials in ordnance will be discussed below, as impacts from ERP and LDP sites detailed in Section 3.5.3 are not anticipated, as long as training activities are coordinated with Eglin's Environmental Restoration Branch (96 CEG/CEVR). Additionally, the transport, storage, use, and disposal of hazardous materials and waste associated with activities within the interstitial area should be coordinated with Eglin's Environmental Compliance Branch, Pollution Prevention Section (96 CEG/CEVCP) and disposed of appropriately according to regulations and AAC Plan 32-5, *Hazardous Waste Management Plan*. AAC Plan 32-9, *Hazardous Materials Management*, describes how Eglin AFB complies with federal, state, Air Force, and DoD laws and instructions. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. All spills and accidental discharges of petroleum products, hazardous materials, or hazardous waste would be reported.

Eglin AFB has developed emergency response procedures and site-specific contingency plans for all hazardous materials locations. Procedures and responsibilities for responding to a hazardous material spill or other incidents are described in the Hazardous Waste Management Plan (U.S. Air Force, 2006c) and the Eglin AFB SPCC Plan (U.S. Air Force, 2005c).

4.6.1 No Action Alternative

Debris

Debris, such as cartridges, canisters from smokes, and flares, as well as litter and refuse from ground troop movement, may be deposited from ground troop activities. If these items are left in

place and not properly disposed of or packed out, the debris and refuse has the potential to cause adverse environmental impacts. AAC Plan 32-5 and AAC Plan 32-9 should be adhered to during training activities for recycling, hazardous materials management, and proper disposal of wastes.

The *Interstitial PEA* (U.S. Air Force, 1998a) stated that the accumulation of debris from munitions was not considered to be significant since training groups were required to police areas for debris after mission training. Although expenditures have increased since the *Interstitial PEA*, post-mission policing of training areas would be expected to remove the majority of debris. Impacts are not anticipated from ground training debris in interstitial areas.

Ordnance Use

Hazardous materials/solid waste, as they pertain to the analysis in this section, are the explosives and metals associated with the expenditure of ordnance within the interstitial area. These materials may degrade the quality of soil or water or may be toxic to plants, wildlife, or people. For the mission activities occurring within the interstitial area, metals and explosives from small-arms blanks, chaff, and flares are the primary chemical materials of concern. Munitions and pyrotechnics use in the interstitial area has increased since the previous baseline, and in some cases has exceeded the 200 percent increase threshold from the *Interstitial PEA*.

Toxic Release Inventory-Data Delivery System

Quantification of chemical constituents in ordnance was determined using the Toxic Release Inventory-Data Delivery System (TRI-DDS) (DoD, 2008). The TRI-DDS is a tool that is a product of the EPCRA Workgroup and is intended to provide a consistent method to assess chemical releases and waste management data across DoD. The EPCRA Workgroup supplies information for the DoD Emergency Planning and Community Right-to-Know Act Toxics Release Inventory reporting database for munitions and range activities.

The TRI-DDS draws on both constituent information and emission factor data to determine the quantities of chemicals released from demilitarization (e.g., open-burn/open-detonation), live fire, and training activities. Calculations in the TRI-DDS begin with identifying and selecting or entering the specific munitions item used. Munitions items are identified in the TRI-DDS by Department of Defense Identification Code (DODIC), Navy Ammunition Logistics Code (NALC), National Stock Number (NSN), or common name pick lists. The resulting TRI-DDS report lists the chemical constituents that comprise each munitions item. These quantities were used to determine quantities of chemicals emitted. Because it is assumed that all munitions debris and dudded munitions will be removed from the Range, and only blanks will be used in the case of small-arms munitions, this analysis addresses air emissions only.

Expenditures

TRI-DDS analysis included the chemical constituents in small-arms blanks, ground burst simulators (GBSs), C-4, chaff, smokes, and flares used for testing and training within the ROI of the interstitial area. Numerous types of munitions are used within the interstitial area; however, for the purposes of analysis, the items listed in the following table were used as surrogates, in some cases as representatives, and where constituent data was not available. Ordnance expenditures shown below in Table 4-8 were provided by user groups and are detailed in

Table 2-1. (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

The DoD's TRI-DDS website was used to determine constituent chemical emissions from the discharge of these representative munitions in the interstitial area. Expenditures were analyzed on an annual basis. Although 33 toxic chemical constituents are listed in the output of the various munitions, only the eight highest are listed here, in Table 4-9. This includes the six insoluble chemicals, which would be the most persistent in the environment.

Table 4-8. Ordnance Expended During Maximum Under No Action Alternative

| Effector Category | Type | Number to Be Expended |
|------------------------|-----------|-----------------------|
| Small arms – blanks | 5.56 mm | 576,000 |
| Small arms – blanks | 7.62 mm | 196,200 |
| Small arms – blanks | .50 cal | 0 |
| Ground burst simulator | M-115 A2 | 5,172 |
| C-4 | N/A | 942 |
| Smoke | 155 mm M4 | 4,038 |
| Flare | M-206 | 0 |

No new TRI reporting thresholds would be exceeded by munitions expenditures associated with the No Action Alternative.

Table 4-9. Munitions-Related Residue Under No Action Alternative

| Chemical | Quantity in Interstitial Area (pounds) |
|-------------------|--|
| Antimony | 5 |
| Barium | 8 |
| Chlorine | <1 |
| Chromium | 3 |
| Hydrochloric acid | 79 |
| Hydrogen fluoride | 0 |
| Lead | 8 |
| n-Hexane | <1 |

Source: DoD, 2008.

ERP Sites

Ground movement in the interstitial area generally occurs in small groups, and the tactical standard is to ensure that sites used for bivouac are left with no sign of their use, so environmental impacts are minimized. Only temporary tent complex operations would include ground disturbance, and this would be minimal. Therefore, it is unlikely that any ERP or LDP sites would be impacted. All ground-disturbing activities, such as the establishment of fighting positions, should occur only in areas known to be devoid of active ERP, LDP, and internal LUC sites. If training personnel should encounter soil that is discolored or has a chemical odor during any ground training operations, the training squadron should immediately notify the Environmental Restoration Branch. Additionally, the Environmental Restoration Branch would be consulted regarding potential ground-maneuvering activities taking place in or near ERP sites; therefore, no adverse impacts to ERP sites would occur.

4.6.2 Alternative 1

Debris

Under Alternative 1, training activities occurring in the Eglin Range interstitial area would increase significantly over the currently approved levels under the No Action Alternative. However, management actions would be in place (Appendix B) to assure training areas will be scanned for debris and that debris removed. Any dudded munitions or UXO would be flagged and removed according to standard procedures.

Therefore, no impacts are expected due to debris associated with the training activities under Alternative 1.

Ordnance Use

Ordnance use would considerably increase under Alternative 1. Other federal actions such as those associated with the ALARNG and 7SFG(A) would contribute heavily to this increase. Each of these actions has undergone the NEPA process to address environmental impacts, and these actions are discussed in greater detail in Appendix A. Ordnance expenditures shown below in Table 4-10 were provided by user groups and are detailed in Table 2-2. (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

Table 4-10. Ordnance Expended During Maximum Under Alternative 1

| Effector Category | Type | Number to Be Expended |
|------------------------|-----------|-----------------------|
| Small arms – blanks | 5.56 mm | 4,404,620 |
| Small arms – blanks | 7.62 mm | 1,385,236 |
| Small arms – blanks | .50 cal | 42,850 |
| Ground burst simulator | M-115 A2 | 30,906 |
| C-4 | N/A | 0 |
| Smoke | 155 mm M4 | 11,439 |
| Flare | M-206 | 8,115 |

The same methodology as above was used to determine the chemical emissions associated with ordnance expenditure as a result of training in the interstitial area. Table 4-11 shows that the chemical output would be significantly higher than under the No Action Alternative, especially for lead. It was calculated that the chemical load from all small arms would be distributed over 178,970 acres and that of chaff and flares would be distributed over 384,106 acres following training within the interstitial areas. Therefore, the overall concentration of any chemical at any given location in the interstitial area would be minute. Additionally, because lead expenditures already require TRI reporting, no new TRI thresholds would be exceeded under Alternative 1.

ERP Sites

Although frequency of activity would increase under this alternative, the training methodology would not differ from the No Action Alternative. Therefore, impacts to ERP and LDP sites would be the same as discussed above, and no adverse impacts to ERP or LDP sites would be expected as result of implementation of Alternative 1.

**Table 4-11. Munitions-Related Residue
Under Alternative 1**

| Chemical | Quantity in Interstitial Area (pounds) |
|-------------------|--|
| Antimony | 40 |
| Barium | 85 |
| Chlorine | <1 |
| Chromium | 12 |
| Hydrochloric acid | 276 |
| Hydrogen fluoride | 13 |
| Lead | 64 |
| n-Hexane | <1 |

Source: DoD, 2008.

4.6.3 Alternative 2

Debris

Under Alternative 2, training activities occurring in the Eglin Range interstitial area would increase 300 percent over the analyzed levels under Alternative 1. However, management actions would be in place (Appendix B) to assure training areas will be scanned for debris and that debris removed. Any dudged munitions or UXO would be flagged and removed according to standard procedures.

Therefore, no impacts are expected due to debris associated with the training activities under Alternative 2.

Ordnance Use

Under Alternative 2, ordnance use would increase a great deal from the levels analyzed in Alternative 1. Ordnance expenditures shown below in Table 4-12 were provided by user groups and are detailed in Table 2-3. (Note: Potential impacts from chemical releases to specific media (i.e., soil, water, air, biological resources) are discussed in each of those respective sections.)

Table 4-12. Ordnance Expended During Maximum Under Alternative 2

| Effector Category | Type | Number to Be Expended |
|------------------------|-----------|-----------------------|
| Small arms – blanks | 5.56 mm | 17,618,480 |
| Small arms – blanks | 7.62 mm | 5,520,944 |
| Small arms – blanks | .50 cal | 171,400 |
| Ground burst simulator | M-115 A2 | 123,624 |
| C-4 | N/A | 0 |
| Smoke | 155 mm M4 | 45,756 |
| Flare | M-206 | 32,460 |

The same methodology was used to determine the chemical emissions associated with ordnance expenditure as a result of training in the interstitial area. Chemical emissions under Alternative 2 are shown in Table 4-13. Increases are approximately four-fold over Alternative 1. Again, since these emissions are shown on an annual basis and the interstitial area is so large, the concentration at any time at any given location would be insignificant. No new TRI thresholds would be exceeded under Alternative 2.

Table 4-13. Munitions-Related Residue Under Alternative 2

| Chemical | Quantity in Interstitial Area (pounds) |
|-------------------|--|
| Antimony | 160 |
| Barium | 341 |
| Chlorine | <1 |
| Chromium | 46 |
| Hydrochloric acid | 1,103 |
| Hydrogen fluoride | 51 |
| Lead | 257 |
| n-Hexane | 1 |

Source: DoD, 2008

ERP Sites

Although frequency of activity would increase under this alternative, the training methodology would not differ from the either of the alternatives above. Therefore, impacts to ERP and LDP sites would be the same as discussed above, and no adverse impacts to ERP or LDP sites would be expected as result of implementation of Alternative 2.

4.7 BIOLOGICAL RESOURCES

This section discusses potential impacts to biological resources from activities conducted in the interstitial areas of Eglin AFB. Analysis focuses on assessing the potential for impacts to biological resources from ground operations, pyrotechnics and munitions use, and air operations (i.e., LZs) in interstitial areas, and on identifying methods to reduce the potential for negative impacts to biological resources from these activities. Significance was determined by the likelihood of an action to jeopardize the continued existence of a species.

4.7.1 No Action Alternative

The activity level approved under the No Action Alternative (Table 2-1) may affect biological resources by direct encounters, noise, chemical impacts, and habitat alteration within a 183,000-acre area; however, the set of management requirements imposed on interstitial activities for this alternative (Appendix B) reduces the potential for negative impacts to biological resources.

Ground Operations

Ground operations include troop movements, vehicle movements, bivouac/camping, and establishment of fighting positions. These activities have the potential to damage sensitive habitats and plants, and sensitive species may be injured, killed, startled, or temporarily displaced by ground operations.

Sensitive Habitats

The sensitive habitats included in the 1998 *Interstitial PEA* were Significant Botanical Sites and Tier 1 natural communities. The Eglin Natural Resources Section has since modified the list of sensitive habitats deemed worthy of special protection to include Outstanding Natural Areas, High Quality Natural Communities, and Significant Botanical Sites, consisting of both wetland

and upland sites (Figure 3-7, Figure 3-8, and Figure 3-6). The No Action Alternative training area includes approximately 41,300 acres of High Quality Natural Communities (55 percent) and 26,300 acres of Significant Botanical Sites/Outstanding Natural Areas (60 percent) (combined due to overlap). Many of these sensitive habitats overlap, so the total area affected is actually less than the sum of the acreages for the three habitat types.

The level of habitat alteration of these sensitive habitats is dependent on community type and vegetation. Physical impact to sensitive vegetation, as well as soil disturbance and altered hydrology, may disrupt the quality of habitat and degrade the diversity and uniqueness of the habitat. Dispersed, low-density troop movements are not likely to impact these sensitive areas; however, large or heavy troop movements, off-road vehicle movements, bivouac, or establishment of fighting positions may cause damage. High quality wet habitats are particularly susceptible to physical damage by ground operations. The following wet Outstanding Natural Areas and Significant Botanical Sites are within the training boundaries: Lower Weaver River, Whitmier Island, Lower Boiling/Little Boiling Creek, Malone Creek, Turkey Gobbler Creek Cypress Swamp, Prairie Creek, Live Oak Creek, Yellow River Basin, Titi Creek Wilderness Area, and Spenser Flats Wetlands/Blue Spring Creek Lakes (Figure 3-6 and Figure 3-7). High Quality Natural Communities are too numerous to list, but include both wetland/riparian and upland sites (Figure 3-7).

As detailed in Appendix B, certain restrictions apply in and near stream and wetland habitats; these restrictions would apply in the wet sensitive habitats just mentioned. User groups would receive basic guidance in wetland identification and be given instructions to avoid wetlands. Access to Outstanding Natural Areas would be restricted (with the exception of Army Ranger use of Whitmier Island). The U.S. Army Rangers would continue to use Whitmier Island as a training objective site because it is the only location along the Yellow River that meets Ranger requirements for swamp training. No new cleared areas (bivouac, fighting positions, holes deeper than 3 feet) would be allowed within 100 feet of any water body or wetland. Large troop movements on steep slopes and in wetlands would be prohibited. Wheeled vehicles must remain on existing trails/roads, except for Special Tactics units, which are the only permitted off-road vehicle user groups. For permitted Special Tactics units off-road vehicle use, vehicles must traverse streams only at designated crossing points, and otherwise must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams. Vehicles must also avoid driving in wetlands.

Implementation of the management requirements in Appendix B would minimize the potential for damage to sensitive habitats; thus, impacts to sensitive habitats would not be significant.

Sensitive Species

The primary potential impacts of concern for sensitive species would be crushing, trampling, noise, erosion, and hydrologic alteration due to vehicle use and troop movements in interstitial areas.

Gopher Tortoise. Certain operations may take place in close proximity to burrows of the state-listed gopher tortoise (Figure 3-10). While it is possible that vehicles could crush an individual tortoise, burrow, or egg clutch during these exercises, this risk would be minimal due

to the fact that all vehicle activity except for Special Tactics units would be limited to established roads and trails. Digging would not be permitted within 25 feet of a gopher tortoise burrow. Due to restrictions on vehicle use and digging, the likelihood of encounters would be low; thus impacts to gopher tortoises from ground maneuvering would not be significant.

Eastern Indigo Snake. Incidental contact with vehicles and troops on foot could result in trampling or crushing of federally threatened eastern indigo snakes, but this occurrence is unlikely, as the snake would most likely move away from the area if it sensed a general disturbance in its vicinity (Figure 3-10). Additionally, the eastern indigo snake is extremely uncommon on Eglin, with no sightings reported since 1999, thus an encounter is unlikely. However, as a precaution, Eglin requires that all units be informed that if an eastern indigo snake is sighted, personnel must allow the snake to leave the area undisturbed and immediately report the sighting to the Natural Resources Section. Thus, ground maneuvers are not likely to adversely affect the eastern indigo snake, and impacts to eastern indigo snakes would not be significant.

Florida Pine Snake. Incidental contact with vehicles and troops on foot could result in trampling or crushing of the state-listed Florida pine snake. However, this occurrence is unlikely, as the snake would most likely move away from the area if it sensed a general disturbance in its vicinity. While potential adverse impacts to individual snakes could occur if encountered during project activities, impacts to overall populations at Eglin would be minimal, considering Eglin has many thousands of acres that provide suitable habitat for the species. Thus, impacts to the Florida pine snake from ground maneuvering would not be significant.

Flatwoods Salamander. Vehicles and troops may move through areas with potential flatwoods salamander habitat; potential habitat includes areas that meet the criteria necessary for flatwoods salamanders to survive, but have not yet had a confirmed sighting of a salamander (Figure 3-10). The main concerns in salamander habitat would be hydrologic alteration and sedimentation. To minimize the potential for these impacts, Eglin restricts digging, vegetation cutting, off-road vehicle use, and other ground-disturbing activities within 1,500 feet of flatwoods salamander ponds, both confirmed and potential.

Given that vehicles and troops would be restricted to established roads near identified salamander habitat constraint areas, ground maneuvers are not likely to adversely affect the flatwoods salamander and impacts to the salamander would not be significant.

Okaloosa Darter. Excess sedimentation is the major threat to stream habitats of the federally endangered Okaloosa darter; therefore, minimization of erosion in Okaloosa darter watersheds is extremely important. To reduce the possibility of increased erosion in Okaloosa darter watersheds, Eglin restricts digging, vegetation cutting, off-road vehicle use, and other ground-disturbing activities within 200 feet of darter streams (Figure 3-10). Additionally, vehicles must remain on existing trails, roads, and bridges when crossing darter streams.

With the restriction of vehicle use and other ground-disturbing activities near Okaloosa darter streams, ground movements are not likely to adversely affect the Okaloosa darter, and impacts to the darter would not be significant.

Red-Cockaded Woodpecker. Vehicle movement and foot traffic would potentially create noise and disturbance that could affect the federally endangered RCW (Figure 3-9). Depending on the type of vehicle, noise levels could be quite loud and accompanied by heavy vibration. Delaney et al. (2002) monitored nesting RCWs as a convoy of vehicles passed (Table 4-14). Birds flew away as a result of the passing of the convoy, but returned shortly thereafter. Vehicle use associated with the No Action Alternative along existing roadways does not represent a novel noise or disturbance source such that birds would abandon the area. Birds near these areas are likely acclimated to the presence of vehicles.

Table 4-14. Red-Cockaded Woodpecker Response to Vehicle Noise and Disturbance

| Noise Source | Noise Level (SEL) | Distance (meters) | Notes |
|---|-------------------|-------------------|--|
| Vehicles (convoy of Bradley fighting vehicles and civilian vehicle) | <75 | >50 | Bird returned 10 minutes after convoy had passed. Birds returned after 3 minutes when civilian vehicle had passed. |

SEL = sound exposure level

Eglin follows the *Management Guidelines for the Red-Cockaded Woodpecker on Army Installations* (U.S. Army, 2006), which details allowed and restricted activities near active RCW trees (Table B-1). Military training within 200 feet of marked cavity trees is limited to military activities of a transient nature (less than two hours of occupation). Military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road, maintained trail, or firebreak. Activities that are not allowed within the 200-foot buffer include bivouacking, excavating, digging, and establishing command posts. Units must immediately report to Range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; Range control must notify Natural Resources Section biologists immediately. Within 3 working days of notification, the Eglin Natural Resources Section would reprovision a cavity tree if one was destroyed due to training activity. All digging for military training activities in RCW habitat management units must be filled and inspected upon completion of training. If a unit caused damage to training land within a cluster, the responsible unit would coordinate with the Natural Resources Section to repair damage as soon as practicable (normally within 3 working days of notification). U.S. Army (2006) provides a detailed description of management requirements with respect to training near RCWs.

In accordance with the Army guidelines discussed above, transient foot and vehicle traffic would be limited to two hours or less, vehicles would use established trails and roads, and no digging/excavating or bivouacking would occur within the 200-foot RCW buffer. Therefore, RCWs are not likely to be adversely affected by ground movements, and impacts to the RCW would not be significant.

Southeastern American Kestrel. The state-listed southeastern American kestrel may be affected by noise and human presence associated with troop and vehicle movements. However, ground maneuvers typically are clandestine operations comprised of a small number of troops, who would not stay in any area for long and would be relatively quiet except for some vehicle noise on established roads. Given the quiet, transient nature most ground maneuvers, impacts to the southeastern American kestrel would not be significant.

Florida Black Bear. The state-listed black bear is a transient species that may pass through the action areas (Figure 3-10). The primary potential impact from ground maneuvers would be from vehicle strikes. To minimize this potential, Eglin requires that troops take measures to avoid injury to black bears. Encounters with black bears would be unlikely, and Eglin requirements would minimize the potential for injury or death to bears. Thus, impacts to black bears from ground movements would not be significant.

Pine Barrens Tree Frog. The state-listed pine barrens tree frog is typically found in herbaceous and shrubby bogs of the Wetland/Riparian ecological association. Eglin's restriction of driving, digging, and large troop movements in wetlands would minimize the potential for impacts to the pine barrens tree frog; therefore, impacts to the pine barrens tree frog from ground maneuvering would not be significant.

Gopher Frog. Of main concern regarding the state-listed gopher frog is the potential to impact wetland breeding sites (Figure 3-10). As stated for the pine barrens tree frog, Eglin's restriction of driving, digging, and large troop movements in wetlands reduces the potential for impacts to the gopher frog; thus, impacts to the gopher frog from ground maneuvering would not be significant.

Migratory Birds. The Armed Forces are exempted from the incidental taking of migratory birds during military readiness activities (such as those being conducted in the interstitial area), except in cases where an activity would likely cause a significant adverse effect to the population of a migratory bird species. Interstitial activities, particularly those in riparian areas, may temporarily disturb migratory birds, but no clearing or construction would occur, making the possibility of direct physical impacts to birds, nests, eggs, and habitat low. Also, vehicles must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams, thus protecting migratory birds in riparian areas. Interstitial training would not result in a significant negative impact on migratory birds, thus interstitial training is exempt.

Invasive Non-native Species. Increased vehicle traffic and ground movements by troops have the potential to introduce and spread invasive non-native species. Humans can act as vectors for the spread of invasive non-native species. However, to reduce this potential Eglin requires inspection of all out-of-area equipment prior to deployment in the field. Vehicles and equipment must be cleaned in accordance with Armed Forces Pest Management Board Technical Guide No. 31, *Retrograde Washdowns: Cleaning and Inspection Procedures* (<http://www.afpmb.org/pubs/tims/tg31/tg31.pdf>), prior to being used on Eglin AFB. With the implementation of these required procedures, impacts to native flora and fauna from invasive non-native species would not be significant.

Overall, with the implementation of the management requirements in Appendix B, impacts to sensitive habitats and species from ground operations would not be significant.

Munitions and Pyrotechnics Use

Munitions use may impact sensitive habitats and species from noise, chemical impacts, and wildfires started by munitions and pyrotechnics. Only blank rounds are used in interstitial areas; therefore direct impacts are not of major concern, and are not discussed further.

Wildfires

The use of munitions and pyrotechnics increases the risk of wildfires. Fires are usually beneficial in restoring natural communities, but it is unknown whether the wildfires potentially associated with the No Action Alternative would have a net positive or negative effect on sensitive habitats and species. Wildfires can cause damage to sensitive habitats if they burn too hot, smolder, or if fire suppression activities are necessary.

Multiple federally listed species, including the flatwoods salamander and RCW, require frequent fire to keep scrubby vegetation to a minimum. Wildfires may achieve this purpose. However, with every wildfire, there is the potential for hydrologic alteration of flatwoods salamander, Florida bog frog, and gopher frog habitat from fire suppression activities, and for damage or mortality of active RCW cavity trees if the trees ignite. Prescribed fire is the preferred option for maintaining these habitats.

Over the past eight years (2000-2007), 57,424 acres have burned from wildfires started by military mission activities. The primary interstitial user group that causes wildfires is the Army Rangers (Table 4-15). Based on the average number of wildfires resulting from Army Ranger training, it was assumed that approximately 12 wildfires affecting 920 acres would occur annually under the No Action Alternative due to interstitial user group training activities.

Munitions and pyrotechnics use would follow Eglin's *Wildfire Specific Action Guide Restrictions*, which rate fire danger from low to extreme (U.S. Air Force, 2006b). During days with low fire danger, there are no restrictions on missions, but on days with extreme fire danger, no pyrotechnics are allowed without prior approval from the Wildland Fire Program Manager at Eglin's Natural Resources Section. Within 3 working days of notification, the Eglin NRS would reprovision a cavity tree if one was destroyed due to training activity (i.e., due to wildfire).

Table 4-15. Wildfires From Military Missions on Eglin AFB from 2000 to 2007

| Cause | Metric | YEAR | | | | | | |
|-------------------|-------------------|-------|-------|--------|-------|-------|-------|-------|
| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Air Force mission | Number of Fires | 36 | 46 | 48 | 49 | 41 | 47 | 75 |
| | Acres Burned | 2,933 | 9,599 | 10,408 | 6,798 | 2,411 | 3,065 | 6,892 |
| | Average Size (ac) | 81 | 209 | 217 | 139 | 59 | 65 | 92 |
| Army mission | Number of Fires | 18 | 14 | 12 | 6 | 6 | 7 | 25 |
| | Acres Burned | 1,975 | 637 | 216 | 1,335 | 44 | 201 | 2,955 |
| | Average Size (ac) | 110 | 45 | 18 | 223 | 7 | 29 | 118 |
| Other missions | Number of Fires | 0 | 0 | 0 | 5 | 5 | 0 | 5 |
| | Acres Burned | 0 | 0 | 0 | 203 | 2,111 | 0 | 198 |
| | Average Size (ac) | 0 | 0 | 0 | 41 | 422 | 0 | 40 |

Source: Eglin DSS, 2008

Negative and beneficial impacts to sensitive habitats and species from wildfires associated with munitions and pyrotechnics use are possible; however, with the implementation of the requirements in Appendix B, overall impacts to biological resources would not be significant. Wildfires are not likely to adversely affect the RCW or flatwoods salamander.

Noise Impacts

Red-cockaded Woodpecker. Noise impacts to the federally endangered RCW are possible from munitions use. Delaney et al. (2002) found that military training exercises of short duration (less than 2 hours) conducted near active RCW cavity trees would not significantly affect the ability of the individuals to successfully reproduce. In accordance with the Army guidelines (U.S. Army, 2006), Eglin's Natural Resources Section requires that training within 200 feet of active RCW trees be of a transient nature (no longer than 2 hours). Also, only blank munitions would be used in interstitial areas. Under the Army guidelines, blank munitions use is allowed within the 200 foot buffer (U.S. Army, 2006). Therefore, with the implementation of the Army guidelines (as described in Appendix B), noise from munitions use associated with blank fire in interstitial areas is not likely to adversely affect the RCW, and impacts would not be significant.

Southeastern American Kestrel. The state-listed southeastern American kestrel inhabits similar pine forest habitat as the RCW, but perches on snags along the perimeter of cleared areas when looking for prey. Research on noise and predatory birds indicates they will startle in response to aircraft overflights, but have been observed to acclimate to this type of disturbance (Anderson et al., 1989). Southeastern American kestrels would be exposed intermittently to noise from blank fire but would likely acclimate to the disturbance over time (Larkin, 1996). Thus, impacts to the southeastern American kestrel from munitions noise would not be significant.

Florida Black Bear. The state-listed Florida black bear may be exposed to noise from blank fire in interstitial areas. This species uses a number of different habitats on Eglin, as indicated by documented sightings throughout the Eglin Reservation. Bears are not limited to any particular geographic area on Eglin and would be free to avoid noise and disturbance from munitions. Thus, impacts to the Florida black bear from munitions noise would not be significant.

Chemical Impacts

Chemical residue from small-arms blanks, flares, ground burst simulators, and smokes has the potential to impact sensitive species health if ingested or accumulated in soils and water. Chemicals can interfere with respiration, reproduction, nervous system functions, and other physiological functions. Sensitive species potentially affected include the federally listed RCW, Okaloosa darter, flatwoods salamander, and eastern indigo snake, and the state-listed pine barrens tree frog, gopher frog, southeastern American kestrel, Florida black bear, and gopher tortoise.

Potential effects on wildlife from the use of flares are inhalation of flare ash and ingestion of or contact with the chemical constituents of flares. The toxic effects of flare ash residue were tested on mammals, plants, and fish, with concentrations of flare ash representing the high range that would be found in a pyrotechnic test area. Results indicated that the effects of flare ash residue are very minimal and not particularly dangerous to the environment (U.S. Air Force, 1997b). Furthermore, the chemical constituents of flares are not of sufficient quantities to change soil, water, or air chemistry. None of the threatened or endangered species are known to be especially sensitive to the chemical constituents of flares.

Wildlife could be potentially exposed to dye-colored smoke through inhalation, ingestion, direct contact, or bioconcentration. The most likely opportunity for such exposure would be immediately after the smoke has been dispelled, but since wildlife would most likely leave the area during training exercises, the likelihood of direct exposure to toxic levels of emissions would be low. Ingestion or inhalation of particles in sufficient amounts to cause harm is unlikely because of the wind-driven distribution of smoke particles. Additionally, the Army guidelines (U.S. Army, 2006) restrict the use of most smokes and pyrotechnics near active RCW trees (Appendix B).

Because aquatic species are particularly susceptible to chemical impacts from smokes, simulators, and flares, Eglin restricts their use within 100 feet of water bodies and directs that they are never to be thrown directly into a water body. To protect water quality, Eglin restricts the release of chemicals or metals into streams and the release of toxic aerosols within 300 feet of streams. These restrictions also apply within the 1,500-foot buffer for flatwoods salamander habitat. Cleanup procedures require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after a training mission has been completed. Post-mission site surveys are required to ensure debris has been removed.

Due to restrictions on where pyrotechnics and munitions can be used, along with required cartridge and debris cleanup (Appendix B), overall impacts to biological resources from chemicals would not be significant. Chemicals are not likely to adversely affect the RCW, Okaloosa darter, flatwoods salamander, or eastern indigo snake.

Air Operations

The primary mechanisms for impact from helicopter LZs and DZs would be ground disturbance and noise. The analyses here focus on the general types of impacts and potential habitats and species affected, along with discussion of management requirements. For information on what species and habitats are present within each current LZ/DZ on Eglin, refer to the *Landing Zone and Drop Zone Environmental Baseline Document* (U.S. Air Force, 2008b). LZs and DZs in sensitive wet habitats could cause soil disturbance and hydrologic alteration. Due to the wet condition and/or slope of these sensitive habitats, it is unlikely that they would be used for landing areas; however, they might be used as DZs. If drops occur in wet sensitive habitats or near streams, troops would minimize disturbance to soils and vegetation to reduce the potential for hydrological alteration, erosion, and sedimentation (i.e., no off-road vehicle use, bivouac, or fighting positions).

Noise from aircraft associated with the LZs and DZs may affect wildlife in the area, particularly the RCW. The type of noise produced from aircraft engaged in paratroop and equipment drops does not represent a new or novel source of disturbance on Eglin. Currently, helicopters and fixed-wing aircraft utilize virtually all of the airspace above the Reservation and adjacent waters, and numerous LZs are located throughout these areas. While some temporary disturbance is possible as a result of helicopter flights near protected species, the quality of habitat seems to override any such negative effects such that protected species, particularly the RCW, are

maintaining a stable population on Eglin. As a precautionary measure, Eglin requires a minimum radius of 500 feet from RCW cavity trees for HLZs.

Given the restriction on ground-disturbing activities in sensitive wet habitats and the 500-foot buffer around HLZs for RCW trees, impacts to biological resources from air operations would not be significant. Air operations are not likely to adversely affect the RCW.

4.7.2 Alternative 1

Alternative 1 would involve the same interstitial areas and management actions as the No Action Alternative, plus the use of new interstitial areas for three large user groups (ARG/MEU, 7SFG(A), and ALARNG), with Alternative 1 covering a total of 329,255 acres Table 4-16. Increases would be seen in the frequency and intensity of activities in interstitial areas and in the number of expendables, such as blanks, smokes, and ground burst simulators (Table 2-2). Use of interstitial areas by each of the new large user groups has been analyzed in separate documents (U.S. Air Force, 2003, U.S. Air Force, 2007a, U.S. Air Force, 2008a). However, the cumulative effects of these groups in combination with other interstitial users have not been examined; this analysis is conducted here. Alternative 1 may affect biological resources by direct encounters, noise, chemical impacts, and habitat alteration; however, the set of management requirements imposed on interstitial activities for this alternative (Appendix B) reduces the potential for negative impacts to biological resources.

**Table 4-16. Comparison of Sensitive Habitats and Species Between
No Action Alternative and Alternative 1**

| Sensitive Habitat/Species | No Action Alternative (acres/#) | Alternative 1 (acres/#) |
|--|------------------------------------|----------------------------|
| Total acreage | 182,936 | 329,255 |
| Outstanding Natural Areas | 26,324 | 31,367 |
| Significant Botanical Areas | 11,461 | 16,287 |
| High Quality Natural Communities | 41,281 | 62,229 |
| RCW active cavity trees | 877 | 1,189 |
| Gopher frog ponds | 37 | 65 |
| Flatwoods salamander ponds (potential) | 21 | 34 |

Ground Operations

Increases in ground operations would result in a greater possibility of direct encounters, noise impacts, and habitat alteration from ground troops and vehicles. Troop movement on foot would increase by approximately 150 percent under Alternative 1 compared to the No Action Alternative; it was assumed that troop movements by vehicle would increase by a similar amount. Off-road vehicle usage would increase under Alternative 1, with three new large user groups approved for off-road activities (ARG/MEU, 7SFG(A), and ALARNG). Approximately the same number of user groups would continue bivouac activities, but most of these groups would involve more troops and a larger land area.

Sensitive Habitats

As with the No Action Alternative, the primary impacts possible in sensitive habitats would be physical impact to sensitive vegetation, soil disturbance, and altered hydrology. Alternative 1 training areas would overlap with two additional wet Outstanding Natural Areas/Significant Botanical Sites (Piney Creek and Brier Creek) (Figure 3-7 and Figure 3-6), to encompass a total of 31,367 acres (73 percent) with Outstanding Natural Areas/Significant Botanical Sites (combined due to overlap), and approximately 62,229 acres (83 percent) of High Quality Natural Communities on Eglin. Although the interstitial training area would overlap with many acres of sensitive habitats, almost all of these areas are protected by restrictions on activities near streams, wetlands, and RCWs, thus also protecting the sensitive habitats. Examples of restrictions include no new cleared areas within 100 feet of any water body or wetland, no driving in wetlands, and restrictions on digging near RCW clusters (Appendix B).

Implementation of the management requirements in Appendix B would minimize the potential for damage to sensitive habitats; thus, impacts to sensitive habitats would not be significant.

Sensitive Species

Similar to the No Action Alternative, impacts to sensitive species may occur due to crushing, trampling, noise, erosion, and hydrologic alteration due to vehicle use and troop movements in interstitial areas. No new kinds of sensitive species would be affected by the enlarged Alternative 1 training footprint, but new areas and the associated individual animals may be impacted, and the frequency and intensity of activities in existing training areas would increase.

Increased ground operations in current interstitial training areas and the introduction of troops to new interstitial areas would increase the potential for impacts from direct encounters, noise, and habitat degradation. Of particular concern would be the increased off-road vehicle use with respect to the Okaloosa darter, gopher tortoise, eastern indigo snake, RCW, migratory birds, flatwoods salamanders, gopher frog, and bog frog. All of these species except the Okaloosa darter were discussed under the No Action Alternative; potential impacts for those species would be the same as for the No Action Alternative. Alternative 1 increases the area where off-road vehicle use would occur to portions of Eglin where Okaloosa darters are present. To reduce the possibility of increased erosion in Okaloosa darter watersheds, Eglin restricts off-road vehicle use within 200 feet of darter streams, and requires that vehicles remain on existing trails, roads, and bridges when crossing darter streams.

Restrictions on off-road vehicle use and ground-disturbing activities (i.e., digging, bivouac) near RCW trees, Okaloosa darter streams, flatwoods salamander habitat, bog frog habitat, stream slopes, and wetlands (Appendix B) would minimize the potential for impacts to these species, even with the enlarged footprint and increased activity level. Thus, with the implementation of the management requirements in Appendix B, impacts to sensitive species from ground operations would not be significant. The RCW, eastern indigo snake, flatwoods salamander, and Okaloosa darter are not likely to be adversely affected.

Munitions and Pyrotechnics Use

Ordnance use would increase under Alternative 1, resulting in increases in noise, wildfires, and possible debris in currently used and new interstitial areas. Alternative 1 would involve the introduction of .50 caliber blanks to interstitial areas, with an overall increase in munitions use (5.5.6, 7.72, and .50 caliber) by 655 percent. Pyrotechnics use (i.e., smokes, simulators, flares) would increase by 400 percent. Only blank munitions are used in interstitial areas, therefore direct impacts are not a concern, and are not discussed further.

Wildfires

Based on the average number of wildfires resulting from Army Ranger training (Table 4-15), under the No Action Alternative, it was assumed that approximately 12 wildfires affecting 920 acres would occur annually due to interstitial user group training activities. Because the primary ignition source from interstitial training is pyrotechnics, the increase in pyrotechnic use was utilized as a predictor for the likely increase in wildfires. Although a 400 percent increase in pyrotechnics use would not necessarily translate into a 400 percent increase in wildfires, for the purposes of comparison, this assumption was made for Alternative 1; the result would be 60 wildfires affecting 5,520 acres annually.

As discussed for the No Action Alternative, wildfires can have positive and negative effects on sensitive habitats and species depending on the timing and intensity of the fire. The main species of concern are flatwoods salamander and gopher frog due to sensitivities with soil disturbance and hydrologic alteration in breeding ponds from firefighting activities, and the RCW because of the potential for damage or mortality to cavity trees if the trees ignite.

Units would follow Eglin's Wildfire Specific Action Guide Restrictions to minimize the potential ignition of wildfires. However, even with observance of these restrictions, some wildfires would occur. The increase in wildfires would require additional firefighting personnel and resources. Section 12.5.13.2 of AFI 32-7064, *Integrated Natural Resources Management*, states that the user group responsible for the increase in wildland fires is responsible for providing the additional funding required for additional resources necessary for wildland fire management.

Negative and beneficial impacts to sensitive habitats and species from wildfires associated with munitions and pyrotechnics use are possible; however, with the implementation of the requirements in Appendix B, overall impacts to biological resources would not be significant. Wildfires are not likely to adversely affect the RCW or flatwoods salamander.

Noise

Noise issues for Alternative 1 would be similar to those for the No Action Alternative, but would occur in some new areas and with increased frequency and intensity. Alternative 1 would also involve the introduction of .50 caliber blanks. The primary species of concern would still be the RCW, kestrel, and black bear. Acreage potentially affected would increase from 182,936 acres to 329,255 acres (Table 4-16). As with the No Action Alternative, kestrels would be exposed intermittently to noise from blank fire but would likely acclimate to the disturbance

over time. Also, because bears are not limited to any particular geographic area on Eglin, they would be free to avoid noise and disturbance from munitions.

The number of active RCW trees within the training footprint would increase from 877 under the No Action Alternative to 1,138 for Alternative 1 (Table 4-16). Alternative 1 user groups would observe the Army guidelines for RCWs (U.S. Army, 2006); these guidelines designate which activities are allowed/not allowed within 200 feet of active RCW trees. In accordance with the Army guidelines, Eglin already requires that training within 200 feet of active RCW trees be of a transient nature (no longer than 2 hours). The Army guidelines do allow blank munitions use (including .50 caliber, 5.56 mm, and 7.62 mm) within the 200-foot buffer.

The Army guidelines were established based on scientific studies, thus with observance of these guidelines (summarized in Appendix B), noise from munitions use associated with blank fire in interstitial areas is not likely to adversely affect the RCW. Overall impacts to sensitive species from interstitial munitions noise would not be significant.

Chemical Impacts

The types of impacts from chemical residue associated with pyrotechnics and munitions would be the same as for the No Action Alternative. Chemicals can interfere with respiration, reproduction, nervous system functions, and other physiological functions. Sensitive species potentially affected would also remain the same, but more individuals may be affected, with a training footprint that increases from 182,936 acres for the No Action Alternative to 329,255 acres for Alternative 1. Within the Alternative 1 training footprint, increases would be seen in the number of active RCW trees, potential flatwoods salamander ponds, Okaloosa darter streams, bog frog sites, and gopher frog ponds (Table 4-16). The same restrictions on pyrotechnics and munitions use for the No Action Alternative would apply to the new user groups and in the new interstitial areas being used (Appendix B).

Although a greater area would be affected, restrictions on where pyrotechnics and munitions can be used, along with required cartridge and debris cleanup (Appendix B), would cause overall impacts to biological resources from chemicals to not be significant. Chemicals are not likely to adversely affect the RCW, Okaloosa darter, flatwoods salamander, or eastern indigo snake.

Air Operations

Approximately the same number of groups would continue assault zone activities, but most of these groups would involve more troops under Alternative 1; thus it was assumed that there would be a greater level and intensity of activity in current and new interstitial areas. Activities at LZs and DZs could result in ground disturbance and noise in the general vicinity. Although activity levels and the number of sites used would increase for Alternative 1, the same restrictions apply (Appendix B). If drops occur in wet sensitive habitats or near streams, troops must minimize disturbance to soils and vegetation (i.e., no off-road vehicle use, bivouac, or fighting positions). Also, Eglin requires a minimum radius of 500 feet from RCW cavity trees for helicopter LZs.

Given the restriction on ground-disturbing activities in sensitive wet habitats and the 500-foot buffer around HLZs for RCW trees, impacts to biological resources from air operations would not be significant. Air operations are not likely to adversely affect the RCW.

4.7.3 Alternative 2

The interstitial areas used for training would be the same as those for Alternative 1, so the acreage utilized would not increase under Alternative 2; however, the frequency of use would increase (Table 2-3), and would involve additional management actions imposed on interstitial activities. A 300 percent increase would occur for all types of interstitial activity, including troop movements on foot and by vehicle, bivouac use, and assault zone use, as well as the use of munitions and pyrotechnics.

Ground Operations

Increased interstitial ground operations would result in the greater likelihood of direct encounters, noise impacts, and habitat degradation. The restrictions listed in Appendix B would avoid or minimize impacts to sensitive habitats and species in most cases, but some additional actions detailed below would further minimize impacts. These additional management actions would be especially important given the large increase in interstitial use.

Sensitive Habitats

While most sensitive wet habitats would be avoided (per Appendix B), Whitmier Island would continue to be used as a training objective site because it is the only location along the Yellow River that meets Army Ranger requirements for swamp training. To minimize impacts to this sensitive, wet Outstanding Natural Area/Significant Botanical Site, high use areas should be closed and rotated to allow time for plants and soils to recover from impacts. In general, areas would be scheduled for use and closure on a two-to-one recovery-to-use ratio. For example, if a training area was scheduled for 2 days of use, it would be closed for the following 4 days. By allowing time for vegetation and soils to recover, impacts to Whitmier Island would be minimized.

Increased activity in interstitial areas may affect the ability of the Natural Resources Section to conduct prescribed fires due to increased frequency of closure or changes in mission needs for habitat types. Because fire is extremely important in almost all of the High Quality Natural Communities, Outstanding Natural Areas, and Significant Botanical Sites on Eglin, prescribed fire should be a priority in these sensitive habitats.

Additional measures to reduce potential impacts to sensitive habitats include random post-mission site surveys for disturbance in sensitive areas and marking of wetland Outstanding Natural Areas and Significant Botanical Sites on field maps as areas to avoid. Also, Eglin should treat areas with known invasive non-native species problems to reduce potential seed sources.

Implementation of the management requirements in Appendix B would minimize the potential for damage to sensitive habitats; thus, impacts to sensitive habitats would not be significant. The

additional management actions mentioned above would further reduce/eliminate potential impacts.

Sensitive Species

Under Alternative 2, the possibility of direct, noise, and habitat impacts to sensitive species would increase. A larger human presence, particularly large troop movements and vehicle movements, would increase the potential for disturbance to sensitive species such as the RCW and direct encounters with species, particularly the black bear. Observance of the restrictions in Appendix B would be extremely important to minimizing such events. Eglin would provide conditions and restrictions regarding biological resources to all participants in verbal or written form, and provide maps showing sensitive habitats and species locations when necessary (i.e., Okaloosa darter streams, flatwoods salamander habitat). Part of these restrictions would be the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004c).

As mentioned for sensitive habitats, prescribed fire must continue to be a priority in fire-dependent habitats, particularly in those areas that support rare species, such as RCW foraging habitat and flatwoods salamander habitat. It is also important to avoid ground-disturbing fire suppression activities (bulldozers) in wetland habitats, especially flatwoods salamander and gopher frog ponds. User groups would need to work with and support the Eglin Natural Resources Section to ensure that sufficient resources (i.e., fire management personnel and equipment) were available to respond to fire emergencies. Each user group must develop a Wildfire Operational Plan in cooperation with the Natural Resources Section to identify high wildfire risk conditions and notification procedures that units would follow to engage fire response personnel when needed. Monitoring of RCWs in training areas would continue such that any changes in these clusters would be detected and appropriately addressed.

Additional protection measures for the gopher tortoise would include the requirement for vehicle operators to avoid gopher tortoises and gopher tortoise burrows, and to immediately report any sightings to the Natural Resources Section. If the burrow was in an area where frequent off-road activity occurred, the Natural Resources Section would evaluate the need for relocation.

Implementation of the management requirements in Appendix B would minimize the potential for negative effects on sensitive species; thus, impacts to sensitive species would not be significant. The additional management actions mentioned above would further reduce or eliminate potential impacts. Ground operations may affect, but are not likely to adversely affect, the RCW, eastern indigo snake, Okaloosa darter, and flatwoods salamander. Eglin is conducting an Endangered Species Act Section 7 consultation to address potential impacts to federally listed species.

Munitions and Pyrotechnics Use

A 300 percent increase in munitions and pyrotechnics use in interstitial areas would result in increased wildfire potential, chemical releases, and noise. Under Alternative 1, it was assumed that approximately 60 wildfires affecting 5,520 acres would occur annually due to interstitial user group training activities. Although a 300 percent increase in pyrotechnics use would not

necessarily translate into a 300 percent increase in wildfires, for the purposes of comparison, this assumption was made for Alternative 2; the resulting increase in wildfires would be 240 wildfires affecting 22,080 acres annually.

To minimize the number of interstitial user group ignited fires, each user group that utilizes pyrotechnics or conducts other activities that have the potential to ignite wildfires would develop a Wildfire Operational Plan with Eglin's Natural Resources Section. This plan would identify high wildfire risk conditions and notification procedures that units would follow to engage fire response personnel when needed. For any wildfires that require fire suppression, use of ground-disturbing equipment (bulldozers) would be avoided in wetland habitats, especially flatwoods salamander and gopher frog ponds, unless absolutely necessary (i.e., fire threatens structures off-base).

As discussed for Alternative 1, noise and chemical impacts would not be significant, even with a 300 percent increase. Management requirements mandating munitions/pyrotechnics debris cleanup and restricting activities near RCW trees and wetlands minimize the potential for impacts to sensitive habitats and species (Appendix B).

Implementation of the management requirements in Appendix B would minimize the potential for negative effects to sensitive habitats and species; thus, impacts to biological resources would not be significant. The additional management actions mentioned above would further reduce or eliminate potential impacts. Munitions and pyrotechnics use may affect, but is not likely to adversely affect, the RCW, eastern indigo snake, Okaloosa darter, and flatwoods salamander. Eglin is conducting an Endangered Species Act Section 7 consultation to address potential impacts to federally listed species.

Air Operations

Although activity levels would increase for Alternative 2, the same restrictions from Appendix B apply (i.e., minimize soils/vegetation disturbance and 500-ft RCW buffer zone around HLZs). Future interstitial LZs and DZs would not be established in wet habitats, particularly those supporting rare species (i.e., flatwoods salamander, gopher frog). When possible, user groups would discontinue use of existing LZs and DZs in these wet areas. Additionally, frequently used LZs would be surveyed for gopher tortoises; the Natural Resources Section would evaluate the need for relocation and apply for relocation permits as appropriate.

Implementation of the management requirements in Appendix B would minimize the potential for negative effects to sensitive habitats and species; thus, impacts to biological resources would not be significant. The additional management actions mentioned above would further reduce or eliminate potential impacts. Air operations may affect, but are not likely to adversely affect, the RCW, eastern indigo snake, Okaloosa darter, and flatwoods salamander. Eglin is conducting an Endangered Species Act Section 7 consultation to address potential impacts to federally listed species.

Additional Management Actions

Appendix B includes a list of the current management requirements to minimize the potential for impacts to biological resources in interstitial areas; these requirements address issues such as off-road activities, digging, tree clearing, wildfire prevention, and debris cleanup. Alternative 2 includes some additional management actions that would further minimize potential impacts to biological resources, as detailed below.

Sensitive Habitats

- Conduct random post-mission site surveys for disturbance in sensitive areas.
- Mark wetlands on field maps as areas to avoid, particularly wetland Outstanding Natural Areas and Significant Botanical Sites; inform trainees of importance of avoiding these areas.
- At Whitmier Island, close and rotate high-use areas on a periodic basis to allow time for plants and soils to recover.
- Do not locate any new LZs or DZs in wet habitats. When possible, discontinue use of LZs and DZs in these wet areas.
- Each user group that utilizes pyrotechnics or conducts other activities that have the potential to ignite wildfires must develop a Wildfire Operational Plan with Eglin's Natural Resources Section.

Sensitive Species

- Do not locate any new LZs or DZs in wet habitats, particularly those supporting rare species (i.e., flatwoods salamander, gopher frog). When possible, discontinue use of LZs and DZs in these wet areas.
- Follow the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004c).
- Inform vehicle operators to avoid gopher tortoises and gopher tortoise burrows. The Natural Resources Section should be notified if one is sighted. If the burrow was in an area where frequent off-road activity occurred, the Natural Resources Section would evaluate the need for relocation.
- Survey frequently used LZs for gopher tortoise burrows. Eglin's Natural Resources Section would evaluate the need for relocation, and apply for relocation permits as necessary.
- In accordance with Section 12.5.13.2 of AFI 32-7064, *Integrated Natural Resources Management*, cooperate with and support the Eglin Natural Resources Section to ensure that sufficient resources (i.e., fire management personnel and equipment) are available to respond to fire emergencies.

- Each user group that utilizes pyrotechnics or conducts other activities that have the potential to ignite wildfires must develop a Wildfire Operational Plan with Eglin's Natural Resources Section.
- Avoid ground-disturbing fire suppression activities (bulldozers) in wetland habitats, especially flatwoods salamander and gopher frog ponds.
- Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary.

4.7.4 Summary

Interstitial ground troop movements, vehicle movements, bivouac, munitions and pyrotechnics use, and air operations may affect sensitive habitats and species through direct encounters, noise, and habitat alteration. The management requirements in Appendix B serve to eliminate or minimize many of the potential impacts from interstitial activities. The increase in activity under Alternative 2 results in a larger training area and increased frequency and intensity of activities, with accompanying increases in potential effects to biological resources. Given the magnitude of the increase in training activities, Alternative 2 included additional management actions intended to further reduce potential impacts to biological resources. Overall impacts to biological resources would not be significant. Alternative 2 interstitial training activities may affect, but are not likely to adversely affect, the RCW, Okaloosa darter, flatwoods salamander, and eastern indigo snake. Eglin is conducting an Endangered Species Act Section 7 consultation to address potential impacts to federally listed species.

4.8 LAND USE AND RECREATION

4.8.1 No Action Alternative

Under the No Action Alternative, land use in the interstitial area would remain consistent with current land uses. Military and recreational use would remain the primary uses. Therefore, there would be no significant impact to land use and recreation under the No Action Alternative.

4.8.2 Alternative 1

Under Alternative 1, land use would remain consistent with current land uses. Military and recreational use would remain the primary uses. Increases or decreases in recreational use would depend on future mission requirements of the military. Any additional training may overlap current training and/or recreational areas. In particular, the addition of the 7SFG(A) will result in a conditional closure of approximately 44,020 acres of public access/recreational land and the permanent closure of between 12,689 and 20,676 acres of land, depending on the location selected for the 7SFG(A) Ranges. There will be no adverse impacts to land use, since it would remain compatible with the existing land uses. However, the public may perceive the change as an adverse reduction in the total amount of area open for public access and outdoor recreation within the interstitial area of the Eglin Range.

Coordination between military activities and recreational activities occur in advance to eliminate potential interference and impacts from multiple land usage. The *Eglin Integrated Natural*

Resource Management Plan maintains compatible use between recreation and the military mission (U.S. Air Force, 2007c). Furthermore, to minimize potential impacts to land use and recreation, several management requirements will be employed. These include: maximizing mission activities in areas that are already permanently closed to the public, reporting violations of any recreational rules to the appropriate authorities,; and submitting a mission request in advance and having prior approval and scheduling before dispensing chaff. Additional regulations detailing limitations and permission of chaff expenditures on Eglin Range will also be followed (See Appendix B: Land Use).

4.8.3 Alternative 2

Alternative 2 would involve the same level of activity as described under Alternative 1 with a 300 percent increase in mission activity with additional management actions imposed on interstitial activities. The same areas will be used for training so that acreage of interstitial areas will not increase under Alternative 2; however the frequency of use will increase. Therefore, Alternative 2 would have similar impacts to land use and recreation as those described under Alternative 1.

4.9 SAFETY

Military lands are open to recreational use as long as public use and safety does not interfere with the military mission. The use of Reservation lands for mission activities is a higher priority. The Sikes Act authorizes and encourages Air Force bases to open areas for outdoor recreation, and requires the Air Force to manage the natural resources of reservations to provide for sustained multipurpose use. The Air Base Wing Commander has inherent administrative authority to revoke outdoor recreation privileges (U.S. Air Force, 2003). In general, testing missions on Eglin are using longer-range weapons and are requiring larger safety footprints extending over more interstitial area with time. Other actions currently undergoing NEPA assessment, such as actions associated with the Eglin BRAC implementation and ALARNG training expansion, may also affect access to recreational areas on the Range. Consequently, future conflicts between recreational use and mission use may arise.

The acreage of restricted access was estimated by overlaying training areas with areas open for public recreation. Not all acreage would be restricted at once, and some areas may not be restricted at all. If a training area required closure for safety reasons, road barriers and posted signs would restrict the locations. The actual area of restriction is not possible to estimate since exact locations and movements of some of the interstitial users are not known. The duration of restriction cannot be calculated since some military groups may have overlapped their training. Although permit data is available, an estimate of actual recreational use (i.e., number of hunters utilizing area) has not been recorded by Jackson Guard.

4.9.1 No Action Alternative

Ground Movements

At the level approved in the *1998 Interstitial PEA* (U.S. Air Force, 1998a), which authorized a 200 percent increase in mission activity over the baseline level captured in the *Fiscal*

Year 1995 (FY95) Range Utilization Report (U.S. Air Force, 1996b), the use of land within the interstitial area for ground maneuvers on foot results in temporary closure of open areas for public recreation (Figure 3-11). The heaviest utilized area, around Camp Rudder (0.6 - 0.8 people-days per year per acre), overlapped 15,804 acres of area open for public recreation in the baseline year (U.S. Air Force, 1997a). The remaining area used for training along the Yellow River (0.4 – 0.6 people-days per year per acre), and the area south of TA B-70, overlapped 39,604 acres of area open to public access (U.S. Air Force, 1997a). The lowest level of troop movement on foot (0.2 - 0.4 people-days per year per acre), which primarily consists of AGOS training area #2, overlapped 18,777 acres of area open to public recreation. This area was used for military training approximately 100 days/year during FY1995. A total of 74,185 acres of open recreational areas coincided with ground training activities in the baseline year (Table 4-17), representing potential impact on recreational users.

Table 4-17. Restricted Access from Troop Movement, No Action Alternative

| Level of Troop Movement | Measure of Impact (Acres of Open Areas Restricted) |
|---------------------------------|--|
| 0.6 – 0.8 People-days/year/acre | 15,804 |
| 0.4 – 0.6 People-days/year/acre | 39,604 |
| 0.2 – 0.4 People-days/year/acre | 18,777 |
| TOTAL | 74,185 |

The use of the interstitial area for bivouac sites sometimes occurs in areas normally open for public recreation. The overlap of bivouac areas with open public recreational areas in FY1995 resulted in the closure of 55,408 acres to public recreation (Table 4-18). These closures were due to mission activity by the Army Rangers and similar groups training along the Yellow River, as well as training by AGOS in the central Reservation. Additional bivouac use caused 18,340 acres of the interstitial area to be closed for only two days of the year (Table 4-18). This was due to the Navy Land Survival Training program which rotates through several campsites and areas used by weekend reservists, such as the Florida Army National Guard and the U.S. Marine Corps Reserve (U.S. Air Force, 1997a).

Table 4-18. Restricted Access from Bivouac Sites, No Action Alternative

| Bivouac Sites | Measure of Impact (Acres of Open Areas Restricted) |
|------------------------------|--|
| Navy Land Survival Campsites | 18,340 |
| All Other User Groups | 55,408 |
| TOTAL | 73,748 |

Ordnance Use

The use of land within the interstitial area for ordnance training results in temporary closure of open areas for public recreation at certain times. The heaviest utilized area for ordnance, around Camp Rudder, overlapped 15,804 acres of area normally open for public recreation in FY1998 (Table 4-19; U.S. Air Force, 1997b). The remaining area used for training along the Yellow River area was also utilized for small arms, although the rate of use was about half the use around Camp Rudder in FY1995. This area overlapped 39,604 acres of Reservation normally

open to public recreation. Area used for AGOS training in the central interstitial area overlapped 20,940 acres of area normally open for public recreation (Table 4-19).

Table 4-19. Restricted Access from Ordnance, No Action Alternative

| Location | Measure of Impact (Acres of Open Areas Restricted) |
|---------------------------------|--|
| Area around Camp Rudder | 15,804 |
| Rest of Area Along Yellow River | 39,604 |
| AGOS Training Area | 20,940 |
| TOTAL | 76,348 |

Summary

Table 4-20 summarizes the acreage of estimated restricted areas of locations normally open for public recreation under the No Action Alternative. Military training on Reservation lands is the first priority, and public access for recreation, while considered, is a lower priority. The lands on the Eglin Military Complex have always been managed in this manner, and a change in priorities is not expected. Since access is only impacted on military land, a decrease in recreational access from interstitial activities is not a significant concern.

Table 4-20. Summary of Restricted Access in the Interstitial Area Under the No Action Alternative

| Mission Activity | Measure of Impact (Approximate Acreage of Open Areas Closed at Various Times During the Year) |
|--------------------------|--|
| Troop Movement on Foot | 74,185 |
| Bivouac Sites | 73,748 |
| Ordnance | 76,348 |
| TOTAL¹ | 76,000 |

1. Rounded, not additive sum due to overlap of military

4.9.2 Alternative 1

Ground Movements

At current levels, the use of land within the interstitial area for ground maneuvers on foot results in temporary closure of open areas for public recreation. A total of approximately 118,243 acres of open recreational areas coincide with ground training activities (Table 4-21), representing potential impact on recreational users. This is an increase in the overall acreage that may be closed since FY1995, but the frequency of closure has decreased since the FY1995 baseline.

The use of the interstitial area for bivouac/camping sites sometimes occurs in areas normally open for public recreation. The overlap of bivouac areas with open public recreational areas results in approximately 50,544 acres of closed areas normally open to the public (Table 4-21), representing potential impact on recreational users. This closed acreage is less than that from the previous FY1995 baseline.

Ordnance Use

Currently, the use of land within the interstitial area for ordnance training (munitions and pyrotechnics) results in temporary closure of open areas for public recreation at certain times. A total of 220,591 acres of open recreational areas coincided with the use of ordnance for training (Table 4-19), representing potential impact on recreational users. However, the heaviest and most frequent use of ordnance is concentrated around Camp Rudder and the Yellow River corridor, which results in approximately 55,000 acres of open areas being restricted. This is a well-established area for ordnance use; therefore, the public is accustomed to this area being closed periodically.

Summary

Table 4-21 summarizes the acreage of estimated restricted areas of locations normally open for public recreation under Alternative 1. Military training on Reservation lands is the first priority, and public access for recreation, while considered, is a lower priority. The lands on the Eglin Military Complex have always been managed in this manner, and a change in priorities is not expected. Open recreational areas are closed periodically throughout the year. Since access is only impacted on military land, a decrease in recreational access from interstitial activities is not a significant concern.

Table 4-21. Summary of Restricted Access in the Interstitial Area Under Alternative 1

| Mission Activity | Measure of Impact (Approximate Acreage of Open Areas Closed at Various Times During Year) |
|--------------------------|--|
| Troop movement on foot | 118,243 |
| Bivouac sites | 50,544 |
| Ordnance | 220,591 |
| TOTAL¹ | 220,600 |

1. Rounded, not additive sum due to overlap of military use.

4.9.3 Alternative 2

A 300 percent increase in mission activity will not increase the acreage of area restricted to public access from that under Alternative 1 since the training areas are the same. Alternative 2 does not propose any additional management requirements which would decrease the restriction of public recreation in these areas. However, the frequency and duration of areas used for training and subsequent restriction will increase. Additionally, management actions outlined in Appendix B, such as optimization of training activities to utilize areas already permanently closed to the public, will ensure there are no adverse effects to safety.

4.10 SOCIOECONOMIC RESOURCES

This section discusses potential impacts that would expose low income and minority populations to disproportionate negative impacts or pose special risks to children (under 18 years old) associated with noise, pollutant transport, and other conditions in the interstitial area. The socioeconomic receptors include nearby communities and property that are impacted by the

noise from Eglin ordnance. Analysis focuses on the exposure of these communities to anticipated environmental effects, identifying potential concern areas by demographics of known population distributions.

4.10.1 No Action Alternative

Under this alternative, the level of training activities would remain the same as defined by the Preferred Alternative in the 1998 *Interstitial PEA* (U.S. Air Force, 1998a). The previously approved level of activity would not have significant impacts to minority/low-income populations or pose special risks to children.

4.10.2 Alternative 1

Noise impacts associated with Alternative 1 would primarily affect communities located near interstitial areas. However, interstitial activities only encompass low levels of noise from weaponry. To further minimize potential impacts to the surrounding communities, no small-arms fire shall occur within 4,000 feet of the Eglin AFB Reservation boundary. Sounds would not travel off of the Reservation from interstitial areas because they are highly forested locations. While some temporary disturbance is possible from low-flying aircraft, the impacts are expected to be minimal. Furthermore, the communities that are located near interstitial areas (Navarre, Niceville, Fort Walton Beach, DeFuniak Springs, and other smaller communities) encompass a population representing all levels of income and minority as well as non-minority families. Since all activities would involve low-level noise activities, disproportionate impacts to minorities and low-income populations would not be anticipated under Alternative 1.

The main potential issue of concern with interstitial area activities is noise because children are more sensitive to noise effects than the adult population. However, noise associated with the interstitial areas (mainly weaponry firing), would not be expected to leave the Eglin Reservation. Other noise generated from activities including low-flying aircraft are expected to be minimal. As a result, special risks to children would not be anticipated under Alternative 1.

4.10.3 Alternative 2

Alternative 2 would have similar impacts as described under Alternative 1. The alternatives involve the same types of activities in the same locations. However, under Alternative 2, there would be a 300 percent increase in the level of activity. An increase in the level of activity would involve additional noise. The majority of noise complaints from residents in surrounding cities were in regards to types of noise generated from low-flying aircraft and explosives. The majority of weaponry used in the interstitial areas would still be low-level and unlikely to leave the Eglin Reservation. Therefore, any impacts from noise would be expected to be minimal. Furthermore, along with any additional level of activity, additional management actions would be later identified and implemented in order to minimize potential impacts to the surrounding community. Since all activities would involve low-level noise activities, disproportionate impacts to minorities and low-income populations would not be anticipated under Alternative 2. Special risks to children would also not be anticipated under Alternative 2.

4.11 CULTURAL RESOURCES

Potential adverse effects due to physical disturbance of cultural resources from troop and vehicle movements, bivouac/camping site establishment, and the digging of fighting positions are the focus of this analysis. Impact analysis was done to estimate the potential for impacts and the extent of impacts to cultural resources in the affected areas. Management requirements to alleviate potential impacts to cultural resources from mission activities are referenced in this section and can be found in Appendix B of this document.

4.11.1 No Action Alternative

Under the No Action Alternative, the level of activity approved in the *1998 Interstitial PEA* and management actions proposed in the *2005 Interstitial EBD* would remain in effect. Appendix B presents cultural resource management actions approved for this current level of training activities.

4.11.2 Alternative 1

Ground operations from current activities and foreseeable future actions have the potential to displace or destroy cultural resources. Troop movement is unlikely to affect archaeological sites except where: the soil is exceptionally soft or devoid of vegetation, foot traffic occurs on steep slopes such as along stream banks or interior gullies, or artifacts are located on the surface of the ground. Areas located within 200 meters of fresh water are generally regarded as high probability zones for the presence of cultural resources; therefore, troop movements should be minimized in these areas whenever possible.

While most vehicle movement is on established roads and is not anticipated to impact cultural resources, some vehicles do travel off-road. Currently the only user groups approved for off-road vehicle use in the interstitial area are Special Tactics units. Vehicle movements should be restricted near water bodies and on steep slopes, which are areas where there is a high potential for archaeological and historic resources.

Ground training activities undertaken by the Alabama Army National Guard are restricted by management actions suggested in previous environmental studies. There are multiple designated areas within the Military Ground Training Area (MGTA) which have avoidance buffers, denoting eligible or potentially eligible site areas. In addition, MGTA Management Unit 6 in the southern portion of the MGTA is restricted to all off-road training activity.

Interstitial training areas are currently being surveyed as part of the 2005 BRAC decision to prepare for the beddown of the 7th SFG(A). Until this survey is complete and areas of avoidance are determined, consultation with 96 CEG/CEVH must be undertaken to prevent adverse effects to cultural resources. Special areas of concern include the ALARNG MGTA, Duke Field, Camp Rudder, and Choctaw Field. Appendix B should be consulted for specific management requirements for these areas.

Primitive bivouac is of concern for cultural resources due to the potential to displace or destroy resources through ground-disturbing activities. Potential primitive bivouac areas for the U.S. Army Rangers overlap 2,900 acres of high sensitivity areas for cultural resources, and many areas have avoidance buffers, which denote eligible or potentially eligible site areas. The only

other user groups that set up primitive bivouac, the Florida Army National Guard (FLARNG) 3-124th Infantry and the Det 1, 334 TS-TAC Tech School, do not overlap with high sensitivity areas or with eligible or potentially eligible sites. To reduce the potential for impacts to cultural resources, all ground-disturbing activities associated with bivouac positions should occur only in areas known to be devoid of cultural resources, or in areas cleared by data recovery excavations.

All ground-disturbing activities, such as the establishment of fighting positions, should occur only in areas known to be devoid of cultural resources, or in areas cleared by data recovery excavations. In the event that artifacts are unavoidably encountered during any ground training operations, the training squadron should immediately notify the Chief of Eglin's Cultural Resources Branch and the Base Historic Preservation Office. Additional management requirements are detailed in Appendix B. With the implementation of the management requirements discussed in Appendix B, impacts to cultural resources are not anticipated.

In the event of unexpected discovery of cultural resources, all activity in the immediate vicinity must cease until the Base Historic Preservation Officer and Cultural Resources Branch (96 CEG/CEVH) have been notified and a determination of significance has been rendered.

4.11.3 Alternative 2

If Appendix B's cultural resource management actions are implemented and adhered to, effects to cultural resources under Alternative 2 (Preferred Alternative) would be identical to those effects discussed under Alternative 1.

4.11.4 Summary

If Appendix B's cultural resource management actions are implemented and adhered to, no impacts are expected to cultural resources.

This page is intentionally blank.

5. LIST OF PREPARERS

| Name/Title | Project Role | Subject Area | Experience |
|--|-----------------|-------------------------------|--|
| Baumann , Alysia NEPA Planner/Specialist | Author | Air Quality and Noise | 4 years of environmental experience |
| Boykin, Brad Junior NEPA Specialist B.S. Biomedical Science MBT Biotechnology | Author | Chemical Materials and Safety | 2 years, biotechnology and chemistry fields |
| Hiers, Stephanie Environmental Scientist B.S., Biology M.S., Conservation Ecology | Author | Biological Resources | 9 years, environmental science |
| Koralewski, Jason Archaeologist M. Liberal Studies, Archaeology M.A. Anthropology B.A. Anthropology | Author | Cultural Resources | 12 years, environmental science |
| McCarty , Pamela C. Economist BSBA, Economics MAAE, Master of Arts in Applied Economics | Author | Socioeconomics and Land Use | 2 years, socioeconomics |
| McKee, Jamie Environmental Scientist | Author | Water Resources | 23 years environmental, 13 years DoD NEPA |
| Nation, Mike Environmental Scientist B.S. Environmental Science/Policy, Minor in Geography; A.A. General Science | GIS Analyst | | 7 years, environmental consultant, interagency coordination, GIS Arc View applications |
| Sands, Amy NEPA Specialist/Planner M.A.S., Environmental Policy and Management B.A., Environmental Studies | Project Manager | | 5 years, environmental science |

List of Preparers

This page is intentionally blank.

6. REFERENCES

Adams, R. L., E. J. Weber, and G. L. Baughman. 1994. *Photolysis of Smoke Dyes on Soils. Environmental Toxicology and Chemistry*. Vol. 13, Issue 6. June. pp. 889–896. Athens.

Anderson, D. E., O. J. Rongstad, and W. R. Mytton, 1989. *Response of nesting red-tailed hawks to helicopter overflights*. Condor 91:296-299.

Boone, 2007. Personal communication between SAIC and Major Robert S. Boone III, Operations Officer, 6th Army Ranger Training Battalion regarding future increase in Ranger training. 16 August.

Delaney D. K., L. L. Pater, R. H. Melton, B. A. MacAllister, R. J. Dooling, B. Lohr, B. F. Brittan-Powell, L. L. Swindell, T. A. Beaty, L. D. Carlile, and E. W. Spadgenske, 2002. *Assessment of Training Noise Impacts on the Red-cockaded Woodpecker: Final Report*. February 2002.

Department of Defense (DoD), 2008. *Toxics Release Inventory Data Delivery System (TRI-DDS), Version 2001v3.11*, web-based reporting database for munitions and range activities. Retrieved from <http://www.dod-trdds.org>, April 2008.

Eglin AFB Cultural Resources Database, 2008. Accessed by George Cole and Jason Koralewski on 06 March 2008.

Eglin Decision Support System (DSS), 2008. Data retrieved by Marlene Johnson, Eglin Fire Section on 27 March 2008.

Federal Aviation Administration, 1985. *Aviation Noise Effects*. March.

Federal Interagency Committee on Noise (FICON), 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*. August 1992.

Federal Interagency Committee On Urban Noise (FICUN), 1980. *Guidelines for Considering Noise in Land Use Planning and Control*. Washington, D.C. NIIS PB83-184838. June 1980.

Finegold, L. S., C. S. Harris, and H. E. vonGlerke, 1994. *Community annoyance and sleep disturbance: Updated criteria for assessing the impacts of general transportation noise on people*. Noise Control Engineering Journal, Vol 42, pp 25–30. Jan-Feb 1994.

Florida Department of Environmental Protection (FDEP), 2004. *Florida's Environmental Protection, State Air Monitoring Reports*. Retrieved from <http://www.dep.state.fl.us/air/ozone/RollingAttain.asp>; Ad Hoc Air Monitoring Report 2000 – 2004.

Florida Department of Environmental Protection (FDEP), 2006a. *The 2006 Integrated Water Quality Assessment for Florida: 2006 305(b) Report and 303(d) List Update*. Retrieved from http://www.dep.state.fl.us/water/tmdl/docs/2006_Integrated_Report.pdf on 11 July 2006.

Florida Department of Environmental Protection (FDEP), 2006b. *2006 Water Quality Assessment Report: Choctawhatchee-St. Andrew Division of Water Resource Management*. Retrieved from <ftp://ftp.dep.state.fl.us/pub/water/basin411/csa/assessment/G3AS-Chocta-LR-Merge.pdf> on 11 July 2006.

Florida Department of Environmental Protection (FDEP), 2007. Water Quality Assessment Report: Pensacola Bay. Division of Water Resource Management. Retrieved from ftp://ftp.dep.state.fl.us/pub/water/basin411/pensacola/assessment/Pensacola_Bay.pdf on 29 June 2007.

Geosyntec Consultants, 2005. *Alternative Causes of Widespread, Low Concentration Perchlorate Impacts to Groundwater*. Strategic Environmental Research And Development Program (SERDP). 05 May. Arlington.

References

Hartley, M. M. Motyka, and G. Chen. 2007. *Perchlorate Free Booby Trap Simulators*, Pyrotechnic Research & Technology Branch, U.S. Army. 24 May. Picatinny, NJ.

Jeffers, 2008. Comments provided on the Preliminary Draft Interstitial Area REA via e-mail on June 10, 2008.

Johnson, Justin, 2007. Personal communication between Justin Johnson, Jackson Guard, and Pamela McCarty, SAIC regarding land use and recreation information on Eglin Reservation.

Larkin, R.P., 1996. *Effects of Military Noise on Wildlife: A Literature Review*, USACERL Technical Report 96/21, January, Center for Wildlife Ecology, Illinois Natural History Survey, Champaign, Illinois.

Leopold, B.R. 2002. *Use and Release of Mercury in the United States*. Science Applications International Corporation. EPA/600/R-02/104 December. Reston.

McKinnon, E. C., and T. R. Pratt, 1998. *A Compilation of Water Quality and Pumpage Data for Select Wells in Santa Rosa, Okaloosa, Walton, and Bay County, Florida*. Northwest Florida Water Management District Technical File Report 98-1. November.

Mitsch, W. J., and J. G. Gosselink, 2000. *Wetlands, 3rd Edition*. John Wiley & Sons: New York.

Schultz, T. J., 1978. *Synthesis of social surveys on noise annoyance*. Journal of the Acoustical Society of America, Vol 64, No 2, pp 377–405.

Shipley Associates, 1995. *How to Write Quality EISs and EAs Guidelines for NEPA Documents*.

Taylor, 2007. *Sugar-based Smoke in Colored Grenades Protects Soldier, Environment*. Army News Service. 03 May.

U.S. Air Force, 1996a. *Eglin Range General Plan – A Framework for the Future*. Headquarters Air Force Development Test Center, Eglin Air Force Base, Florida.

U.S. Air Force, 1996b. *FY95 Range Utilization Report*. 46 Test Wing Range Environmental Planning Office, Air Force Developmental Test Center, Eglin AFB, Florida. September 1996.

U.S. Air Force, 1997a. *Interstitial Areas Environmental Baseline Document*. AFDTDC (Air Force Test Development Center), 46 TW/XPE, Range Environmental Planning Office, Eglin Air Force Base, Florida, 32542-6808.

U.S. Air Force, 1997b. *Environmental Effects of Self-Protection Chaff and Flares*. U.S. Air Force, Air Combat Command. August 1997.

U.S. Air Force, 1998a. *Interstitial Area Final Programmatic Environmental Assessment*. AFDTDC, 46 TW/XPE, Range Environmental Planning Office, Eglin Air Force Base, Florida. April 1998.

U.S. Air Force, 1998b. *Overland Air Operations Final Programmatic Environmental Assessment*, Eglin Air Force Base, FL. 46th Test Wing, Range Environmental Planning Office, Air Force Developmental Test Center, Eglin AFB, Florida.

U.S. Air Force, 2000. Draft Air Armament Center (AAC) Instruction 91-201, *AAC Test Safety Review Process*. Range Safety Office (AAC/SEU), Eglin AFB, FL. 2000.

U.S. Air Force, 2002a. *Environmental Restoration Program (ERP) Management Action Plan (MAP)*. Produced by CH2Mhill for the Air Armament Center, Eglin AFB, Florida. October 2002.

U.S. Air Force, 2002b. *Archives Search Report for Legacy Debris Pits at Eglin Air Force Base, Fort Walton Beach Florida*. April 2002. Prepared for the Department of the Air Force AFTDC/EMR by U.S. Army Corp of Engineers, Saint Louis District.

References

U.S. Air Force, 2003. *Environmental Baseline Study-Resource Appendices (EBSRA) Volume I, Eglin Land Test and Training Range*, Department of the Air Force Air Armament Center, Eglin Air Force Base, Florida, December 2003.

U.S. Air Force, 2004. *Estuarine and Riverine Programmatic Environmental Assessment (PEA)*, Eglin AFB, FL. June.

U.S. Air Force, 2004b. *UXO Map 2004 Methodology Document*. Legacy Work Group Eglin AFB, FL. Retrieved from <https://em.eglin.af.mil/userdocs/emr/UXOMapMethodology.doc> on 25 February 2005.

U.S. Air Force, 2004c. *Standard Protection Measures for the Eastern Indigo Snake* (Revised 12 February 2004).

U.S. Air Force, 2005a. *Interstitial Area Environmental Baseline Document, Revision 1*. Department of the Air Force, Air Armament Center, Eglin Air Force Base, Florida. March 2005.

U.S. Air Force, 2005b. *Santa Rosa Island Programmatic Environmental Assessment*. 46 TW/XPE, Range Environmental Planning Office, Eglin Air Force Base, Florida. March 2005.

U.S. Air Force, 2005c. *Spill Prevention, Control, and Countermeasures (SPCC) Plan*. Department of the Air Force, Eglin Air Force Base, Florida.

U.S. Air Force, 2006a. *Preliminary Draft Environmental Impact Statement for the Proposed Implementation of the Base Realignment and Closure (BRAC) 2005 Decisions and Related Actions at Eglin AFB, FL*.

U.S. Air Force, 2006b. *Wildfire Specific Action Guide Restrictions*, Eglin Air Force Base, Florida.

U.S. Air Force, 2006c. *Hazardous Waste Management, AAC Instruction 32-7003*. Headquarters, AAC, Eglin AFB, Florida. June.

U.S. Air Force, 2007a. *Alabama Army National Guard Implementation of a Portion of the Master Plan for Cobb Training Site Final Environmental Assessment*, Eglin Air Force Base, Florida. July 2007.

U.S. Air Force, 2007b. *Environmental Restoration Program Sites Status Report*. Eglin Air Force Base, Florida. June.

U.S. Air Force, 2007c. *Integrated Natural Resources Management Plan (INRMP)*. Department of the Air Force. Eglin Air Force Base, Florida.

U.S. Air Force, 2007d. *Outdoor Recreation, Hunting, and Freshwater Fishing Map and Regulations 2006-2007*. Jackson Guard, Eglin Air Force Base.

U.S. Air Force, 2007e. *Preliminary Assessment Report and Site Investigation/Interim Corrective Measures Work Plan Point of Interest Nos. 516 and 517 Honey Creek and Pine Log Creek Cattle Dipping Vats*. Air Armament Center, Air Force Materiel Command, Eglin Air Force Florida. December 2007.

U.S. Air Force, 2008a. *Proposed Implementation of the Base Realignment and Closure (BRAC) 2005 Decisions and Related Actions at Eglin AFB, FL Draft Environmental Impact Statement*. March 2008.

U.S. Air Force, 2008b. *Landing Zone and Drop Zone Environmental Baseline Document*. Eglin AFB, FL.

U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), 2005. *Operational Noise Management: An Orientation Handbook for Army Facilities*. November 2005.

U.S. Army Corps of Engineers (USACE), 1987. *Wetlands Delineation Manual*. Wetlands Research Program Technical Report Y-87-1. Waterways Experiment Station.

References

U.S. Army Corps of Engineers (USACE), 2002. St. Louis District, Archives Search Report for Legacy Debris Pits at Eglin AFB. Prepared for AAC/96th ABW/EMR, April 2002

U.S. Army, 2004. *Draft Standards in Weapons Training (Special Operations Forces)*. Department of the Army Pamphlet 350-38, Chapter 12.

U.S. Army. 2006. *Management Guidelines for the Red-cockaded Woodpecker on Army Installations*. U.S. Army Headquarters, Washington, D.C.

U.S. Army, 2007. U.S. Army Ranger School, Florida Phase. Fort Benning, Georgia. Retrieved from https://www.benning.army.mil/rtb/RANGER/florida_phase1.htm, on 07 August 2007.

U.S. Department of Agriculture, 1995. *Soil Survey of Okaloosa County, Florida*. Natural Resources Conservation Services. June 1995.

U.S. Environmental Protection Agency (USEPA), 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Office of Noise Abatement and Control. EPA Report 550/9-74-004.

U. S. Environmental Protection Agency (USEPA), 1995. *America's Wetlands: Our Vital Link Between Land and Water*.

U.S. Environmental Protection Agency (USEPA), 2002. U.S. Environmental Protection Agency 2002 National Emissions Inventory Microsoft Access Database. Accessed May 2006.

U.S. Environmental Protection Agency (USEPA), 2005. *Transportation and Air Quality*, 10 February 2005. Retrieved from <http://www.epa.gov/otaq/> on 18 March 2005.

U.S. Environmental Protection Agency (USEPA), 2006. *Clean Water Act, Section 401 Certification*. Retrieved from <http://www.epa.gov/OWOW/wetlands/regs/sec401.html> on 13 March 2007.

U.S. Environmental Protection Agency (USEPA), 2007. *Counties Designated as Nonattainment for Clean Air Act's National Ambient Air Quality Standards (NAAQS)*. Retrieved from <http://www.epa.gov/oar/oaqps/greenbk/mapnpoll.html>, on 07 November 2007.

U.S. Fish and Wildlife Service (USFWS), 1979. *National Wetlands Inventory Classification for Wetlands and Deepwater Habitats of the United States*. Cowardin, L.M.

U.S. Fish and Wildlife Service (USFWS), 2008. *The Endangered Species Program*, article, “Consultations with Federal Agencies: Section 7 of the Endangered Species Act.” Retrieved from <http://www.fws.gov/endangered/consultations>, on 22 January 2008.

U.S. Marine Corps (USMC) and Department of the Navy (DON), 2003. *Amphibious Ready Group/Marine Expeditionary Unit (ARG/MEU) Readiness Training Environmental Assessment*. Marine Corps, U.S. Navy, and the Air Armament Center (Cooperating Agency). April 2003.

Wilkin, R.T. D. D. Fine, and N. G. Burnett. 2007. *Perchlorate Behavior in a Municipal Lake Following Fireworks Displays*. Environ. Sci. Technol., 41 (11), 3966 -3971.

APPENDIX A

INTERSTITIAL USER GROUP TRAINING DESCRIPTIONS

INTERSTITIAL USER GROUP TRAINING DESCRIPTIONS

This appendix provides a summary of the training activities associated with each of the user groups training in the interstitial area. Section A.1 provides descriptions for existing user groups currently conducting training in interstitial areas, as described in the *2005 Interstitial EBD*. Section A.2 provides descriptions for future ground-maneuvering/training activities associated with user groups associated with foreseeable future user groups, the Alabama Army National Guard (ALARNG) and the Army 7th Special Forces Group (Airborne), or 7SFG(A).

A.1 CURRENT USER GROUP TRAINING ACTIVITIES

U.S. Air Force, Special Operations Command

The Special Tactics Group (with associated squadrons, 23STS and AST) at Hurlburt Field conducts several types of ground training across the interstitial area west of Highway 85 (Figure 2-1). The units conduct small unit type field training events and Call for Fire (CFF) and Close Air Support (CAS) mission sets.

The unit conducts parachute and paradrop operations at Field 6 (Camp Rudder) and 3- to 5-day field exercises for teams of up to 12 airmen. The frequency of these exercises has diminished in the last few years because of unit deployments; however, an estimate of maximum exercises is approximately three per month.

Unit training exercises include tactical movements on the Yellow River, dismounted infiltration, and the use of four-wheeled all-terrain vehicles (ATVs) for cross country movement. In addition to maneuver, special operators conduct tactical air control of air assets and personnel recovery and escort training. Exercises may include overnight bivouac in primitive conditions.

Special Tactics squadrons are primarily the ground control of aircraft. These are conducted primarily at Field 1, Field 6, Field 7, Field 10 (Choctaw Field), and around Range A-77/78 and TA C-52, and include up to 15 people for up to 200 days per year. This activity includes ATVs and High Mobility Multipurpose Wheeled Vehicles (HMMWVs) around landing zones (LZs) and drop zones (DZs). For the most part, off-road vehicle use is through cleared areas, but sometimes it is necessary to transverse through rough, uncleared areas. Aircraft utilization are normally AFSOC assets and at times fighters and helo support from outside of Hurlburt/Eglin.

U.S. Air Force Special Operations Command

HAVE ACE is a ground activity that conducts specialized training for Special Forces. The event historically occurs in the interstitial area five nights a week, every week of the year. HAVE ACE missions are the infiltration and exfiltration of personnel as quickly as possible without leaving any signature of troop presence. HAVE ACE activity is restricted to the western portion of the Range where they operate within the entire western interstitial area (Figure 2-1). Interstitial activity consists of armed route escorts and combat survival training with small groups (6 to 20 people).

HAVE ACE uses all LZs and DZs but primarily uses Auxiliary Field 6 (Camp Rudder) for aircraft landings and paratroops.

Armed route escorts involving 6 to 10 personnel are conducted at least once a week for a four-hour period. The group is inserted at Field 6, then moves directly south or west to TA A-77 and TA A-78 and conducts a simulated recovery. Troops move by military vehicles on established Range roads at night during blacked-out conditions. Bivouac areas are not established during HAVE ACE training.

Combat survival training is performed in the Field 6 area and at TA B-5. Movement of troops is strictly on foot during combat survival training. This is done once a week for 12 hours but may extend to a 24-hour operation. The size of the group ranges from 12 to 20 people and bivouac sites are not used.

U.S. Army, Army Ranger Training

The 6th Ranger Training Battalion (RTB) operates out of Camp Rudder (Auxiliary Field 6) on Eglin AFB. The 6th RTB is responsible for conducting specialized training in leadership and operations in a jungle/swamp/riverine/coastal environment otherwise referred to as Florida Ranger training. This third and last phase of the U.S. Army's Ranger School is focused on developing small unit leadership through light fighter training. Eleven classes are conducted each year. Duration of the Florida Phase is 18 days, and includes 13 days of training in the field. Classes currently range from 100 to 250 students.

Ranger students are formed into small units (platoons) and conduct infiltration, raid, surveillance, and ambush missions through different areas of the western portion of the Eglin AFB interstitial area. Patrols and insertions are conducted by foot, Zodiac boat, air assault from rotary aircraft, and parachute. Training is conducted under realistic conditions that train Ranger students to infiltrate undetected and operate behind enemy lines for extended periods of time.

Ranger training in the Eglin AFB interstitial area is 18 days long, with six days of skills and techniques instruction, nine days for a field exercise, and three days of administration/clean-up/recovery. Four days of the skills and techniques instruction include some training in the field, and the entire eight-day exercise is conducted in the field.

Field activities in the interstitial area are limited to the northwestern portion of the Reservation along the Yellow River and south to the area of TA B-70. Riverine and estuarine movements are covered in the *Estuarine/Riverine Programmatic Environmental Assessment* (U.S. Air Force, 2004), and field activities on Santa Rosa Island are covered in the *Santa Rosa Island Programmatic Environmental Assessment* (U.S. Air Force, 2005). Figure 2-1 illustrates the land areas that the Rangers use regularly. Troops move by foot across the interior areas, but occasionally light trucks or buses are used to move troops across public roads or when great distances must be covered. Airborne operations include the use of parachutes and insertion using military UH60 helicopters or C-130s (for paratroops) when air support is available.

Florida Army National Guard, 3rd Battalion 124th Infantry

The 3rd Battalion 124th Infantry of the Florida Army National Guard (FLARNG) conducts training in the eastern region of Eglin AFB up to six weekends annually. Weekend exercises include approximately 60 to 70 personnel. The National Guard unit stages out of one of three locations: 1) a DZ at TA C-61, 2) Rock Hill LZ, or 3) LZ East. Training occurs within the DZ/LZ and in the woods around the zone. Training does not occur any farther than 750 meters (0.5 miles) into the woods. Figure 2-1 illustrates the FLARNG training areas. Activities for training include infantry squad, defend, and ambush raids. Blank ammunition is used, and expended cartridges may not always be picked up. Smoke and ground burst simulators are also expended during training sessions. Nights are spent in the field in primitive conditions, and personnel usually sleep under a poncho.

U.S. Air Force Auxiliary, Civil Air Patrol

The Civil Air Patrol (CAP) conducts ground training on Eglin AFB four times per year. The training is over one weekend with up to 50 personnel training on the ground. The areas used for training are in the vicinity of Auxiliary Field 6 (Camp Rudder), Duke Field, and Duck Pond (Figure 2-1). Training includes search and rescue and marijuana plantation identification.

Munitions are not utilized during training. One to three small tents are erected for overnight stays and portalets are on site. Small campfires may be authorized when properly coordinated through the Natural Resources Section (96 CEG/CEVSN). All ground-disturbing activities should be coordinated through Cultural Resources Branch (96 CEG/CEVH).

U.S. Air Force, 919th Special Operations Wing

The 919th Special Operations Wing (SOW) bivouacs and conducts field training at Auxiliary Field 3 (Duke Field) and Auxiliary Field 5 (TA B-4) up to eight times per year (Figure 2-1). The 919th SOW also conducts paratroop operations almost on a daily basis, utilizing primarily Duke Field and Auxiliary Fields 1 (TA C-5) and 6 (Camp Rudder). In recent years, the training frequency has dropped to three to four times annually, but it is likely that it will increase again.

U.S. Air Force, Regional Hospital

The Regional Hospital uses Auxiliary Fields 1 (TA C-5), 3 (Duke Field), 4, and 5 (TA B-4) for hospital readiness field training, and bivouacs at Auxiliary Field 3 (Figure 2-1). The frequency and duration varies, but generally one to two deployments per year are performed, with each deployment lasting about a week. Exercises do not include more than 200 personnel. Training is conducted only in cleared areas within the auxiliary fields. Tents and kitchens are set up on established tent pads with access to water and electricity. Wastewater is emptied into a wastewater tank and then emptied on base. Training includes medical, evacuation, and logistical support.

U.S. Air Force, Security Police Training

Once a year, Air Force security personnel train for the Defender Challenge competition. During the first two weeks, over 55 personnel participate in the competition for selection on the team.

Once the team is selected, an additional three weeks of training are focused on preparing the selected team for the Air Force-wide competition. The competition evaluates security personnel on tactical craft and weapons marksmanship. Figure 2-1 illustrates the training areas used for these events. Dismounted maneuvers are conducted on Auxiliary Field 5 (TA B-4).

720 STGP Joint Training Support

The 720th Special Tactics Group (720 STGP) is the headquarters for six special tactics squadrons including the 23 STS addressed previously under JON 921AZFF0. The 720th conducts AST similar to the 23rd, and it hosts a three-week exercise for each of its assigned special tactics squadrons. Each squadron deploys to Eglin AFB to conduct training that includes a five-day ground training event in the interstitial area.

728 TCS Scheduling Support

The 728th Tactical Control Squadron (728 TCS) conducts tactical field training at the TA D-84 area up to two times annually. Training exercises may include up to 400 airmen conducting base camp and force protection training. The bivouac area is a temporary tent complex. Only blank ammunition is used. As there are special cultural considerations in this area, all ground-disturbing activities should be coordinated through 96 CEG/CEVH.

U.S. Air Force, Detachment 1, 334th Training Squadron

Detachment 1, 334 Training Squadron (TS) conducts the U.S. Air Force Tactical Air Command and Control Specialist Technical School at Hurlburt Field. This course is conducted 10 times annually and includes a five-day field exercise that may include up to 50 people. The field exercise is conducted in the interstitial area with the same boundaries as the North-South Corridor (NSC) (Figure 2-1). The students are trained in the planning, coordination, and control of Close Air Support (CAS) missions by training in tactics and procedures used when air and surface combat forces conduct joint operations (U.S. Air Force, 2005a).

Training includes dismounted maneuvers throughout the NSC, and mounted maneuvers on the road network using 10 HMMWVs. The course includes day and night, mounted and dismounted land navigation training. Students react to ambush and indirect fire with small-arms blanks, smokes, and artillery simulators. Troop presence is heaviest at the three observation points where students perform radio calls and coordinate a simulated air strike on a target. Each observation point is about a 2,000-square-foot area in which the students are concentrated. The students and instructors drive on Range roads between these established points. A base camp (not for public use) within Training Area 1 is used for overnight stays. The base camp is approximately 4 kilometers east of Highway 85 and 8 kilometers south of Duke Field. The base camp may include up to 18 (6ft x 6ft x 18in) temporary fighting positions at this location. Students backfill the positions when complete. Bivouac is primitive and rations are MREs or warm rations prepared on Main Base. Portalets are available, and a trailer is used as the command post. Training munitions include: flares, ground burst simulators, 7.62 mm blanks, and M-18 smoke grenades. The students attempt to recover all blank cartridges. They do not use personal protection devices, such as respirators, when using smoke grenades, but do throw them downwind.

U.S. Air Force, 96th Ground Combat Training Squadron

The 96th Ground Combat Training Squadron (96 GCTS) conducts mounted patrol and convoy operations in interstitial areas. Dismounted operations are also conducted, but are limited to improved roadways around TA B-75 only. Table A-1 summarizes the training operations conducted by the 96 GCTS. Table A-2 summarizes the number of expendables utilized during mounted patrol and convoy operations annually. Figure 2-1 shows the routes utilized by 96 GCTS for training operations.

Table A-1. 96 GCTS Training Operations Occurring in Interstitial Areas

| Equipment Type | Operation | Missions/Year | Hours/Year |
|--|---------------------------------------|---------------|------------|
| HMMWV (M-1117 M-1152) 5 Ton Cargo (M-925/926) | Mounted Patrol Ops & Convoy Ops | 720 | 1,440 hrs |
| | Dismounted Ops limited to Roadway Use | 720 | 1,440 hrs |
| HMMWV (M-998) | Range Support | 15 | 30 hrs |
| (FUTURE) MRAP | Mounted Patrol Ops & Convoy Ops | 720 | 1,440 hrs |
| | Dismounted Ops limited to Roadway Use | 720 | 1,440 hrs |

Table A-2. 96 GCTS Annual Expendables for Mounted Patrols and Convoy Operations

| Expendables | Annual Totals |
|-------------------------|---------------|
| 5.56 blanks | 24,000 |
| 5.56 link blanks | 18,000 |
| 7.62 blanks | 12,000 |
| Smoke grenades | 240 |
| Ground burst simulators | 120 |
| IED simulators | 120 |

U.S. Navy and U.S. Marines ARG/MEU

The ARG/MEU utilized Eglin AFB for training for the first time in December 2003 (FY2004). This training is anticipated to occur up to two times per year, with each training event lasting a total duration of no greater than 10 days. Each training rotation would include up to 500 dismounted marines in the interstitial area. Interstitial areas that are used include Auxiliary Fields 1 (TA C-5), 3 (Duke Field), 4, 5 (TA B-4), 6 (Camp Rudder), 10 (Choctaw Field); LZ East; TA D-84; and general interstitial areas. In interstitial areas, this training involves ground movements, pyrotechnics use, munitions use, and aviation operations. Training in interstitial areas includes blanks, blast simulators, and smokes. Detailed descriptions of each activity are provided in the *ARG/MEU Readiness Training Final Environmental Assessment* (U.S. Marine Corps, 2003).

A.2 FORESEEABLE FUTURE USER GROUP TRAINING ACTIVITIES

Alabama Army National Guard (ALARNG) (U.S. Air Force, 2007a)

The ALARNG requires a Military Ground Training Area (MGTA) to meet their requirements for maneuver and individual/crew/squad (ICS) training. Training Circular (TC) 25-1, Training Land (U.S. Army, 2004) and TC 25-8, Training Ranges (U.S. Army, 1992) establish the training requirements which must be met. This MGTA would be made up of 11,963 acres located within the interstitial area of Eglin AFB. It is expected that one-third of the MGTA would be used on each of 41 weekends¹ and up to 40 weekdays per year during the ALARNG two-week annual training exercise. This area would provide training for up to 600 soldiers on an average weekend and up to 1,800 on an infrequent (about 10 percent of the time) surge weekend. In addition to dismounted soldiers, an average of 40 vehicles would be in the training areas. During a surge weekend, 100 wheeled vehicles would be expected to traffic the training areas. The majority of the vehicles is based in Alabama and would be driven or transported to Eglin AFB for training events. Fuels for the vehicles would be obtained from Eglin AFB, and the ALARNG follows standard operating procedures (SOPs) with respect to fueling. The proposed ALARNG action includes designating a number of different training management units of varying size within the MGTA. This segmentation allows for flexibility through scheduling. Multiple ALARNG units would be able to schedule joint or independent training, based on each unit's unique training goals. On a rotational basis, training management units would be closed for maintenance and vegetative recovery periods. The proposed ALARNG action would provide a joint-use real estate agreement from Eglin AFB to the ALARNG for use of the MGTA. The ALARNG requires a minimum of 5,000 acres on a given weekend (ALARNG, 2004); however, to effectively manage lands and allow for rotational use, twice that acreage is preferred.

The primary use of the MGTA would be for ICS training. This type of training is conducted to improve soldier and small-team ability to perform necessary tasks. Tasks are either common for all soldiers or specific to military occupational specialty. Common tasks include donning chemical protection gear, first aid, radio use and protocol, land navigation, and weapon maintenance. Specialty tasks include putting a communications node into operation, installing a concertina (coiled barbed wire) barrier, or constructing a fighting position, which would include digging ditches. ICS training can be integrated into multilevel training, scheduled as independent exercises, or conducted as opportunity training (see Appendix B for special cultural resources consideration in the MGTA). Independent exercises and opportunity training require minimal land and no live ammunition. Vehicular movement is also minimal.

Some units would use the MGTA for small-scale maneuver training. Such training can be dismounted, in tracked or wheeled vehicles, or flown. Some types of maneuver training require open land, some require a strong road network, and some rely on dense vegetation and/or topography. Maneuver training would include pyrotechnics and blast simulators but would not include live-fire ammunition.

For ICS and maneuver training, it is expected that the majority of training would be dismounted movements supported by wheeled vehicles. It is possible that there would be occasional requirements for some tracked vehicles to maneuver using existing roads and trails and up to

¹ The ALARNG does not normally schedule field training on the 11 weekends on which holidays occur.

200 feet off trails, as currently approved by Eglin AFB in other environmental documentation. Table A-3 illustrates the typical use of the MGTA during a weekend, during a two-week training event, and annually.

The ALARNG would perform water purification within the MGTA using available fresh and estuarine water. The water purification system would be transported on existing roads to water sources. Disposal of the wastewater from the process would go on the ground to replenish the aquifer and would not go back into the source directly. The backwash from cleaning the filters would go into the Eglin AFB sewage treatment plant. This water purification process has already been approved by Eglin AFB for use on military property on Santa Rosa Island. Water purification training would occur approximately one time per quarter and during active duty training (ADT).

Table A-3. Proposed MGTA Expenditures and Effectors

| | Weekend | | Two Week | | Annual ⁷ | |
|--------------------------------|---------|------------------|----------|------------------|---------------------|------------------|
| Dismount ¹ | 1.0 | People-Days/Acre | 1.6 | People-Days/Acre | 6.3 | People-Days/Acre |
| Wheel vehicle ² | 0.8 | HMMWV-Miles/Acre | 2.3 | HMMWV-Miles/Acre | 6.3 | HMMWV-Miles/Acre |
| Track vehicle ³ | 0.1 | M270-Miles/Acre | 0.1 | M270-Miles/Acre | 0.2 | M270-Miles/Acre |
| Generators ⁴ | 30 | Hours (5kw) | 800 | Hours (5kw) | 10,000 | Hours (5kw) |
| Equipment ⁵ | 36 | Hours (SEE) | 480 | Hours (SEE) | 5000 | Hours (SEE) |
| 5.56mm Blanks ⁶ | 2,000 | Rounds | 18,000 | Rounds | 80,000 | Rounds |
| 7.62mm Blanks ⁶ | 2,000 | Rounds | 10,000 | Rounds | 54,000 | Rounds |
| .50 caliber Blank ⁶ | 2,000 | Rounds | 10,000 | Rounds | 40,000 | Rounds |
| Blast Simulator ⁶ | 20 | Canisters | 40 | Canisters | 500 | Canisters |
| Flare ⁶ | 20 | Canisters | 40 | Canisters | 500 | Canisters |
| Smoke Grenades ⁶ | 20 | Grenades | 40 | Grenades | 500 | Grenades |

Notes: ¹ People-Days/Acre is a normalized approximation of soldiers that would be walking through a representative acre for the period noted.

² M1038 Cargo/Troop Carrier High Mobility Multipurpose Wheeled Vehicle (HMMWV) is the most common ALARNG wheeled vehicle and is used for normalizing wheeled vehicle impacts.

³ M270 Multiple Launch Rocket System (MLRS) Launcher vehicle is the most likely vehicle to maneuver in the MGTA and is used for normalizing tracked vehicle impacts.

⁴ The most common generator to be employed in the MGTA is a small 5 kilowatt (kw) ground generator.

⁵ The Small Emplacement Excavator (SEE) is the most common piece of engineer equipment and is used to represent normalizing all equipment impacts.

⁶ A single Department of Defense Identification Code (DODIC) should be used to represent normalized expenditures: A080 for 5.56 blanks, A111 for 7.62 blanks, A598 for .50 blanks, L594 for Blast Simulator, L312 for Flare, and G945 for Smoke Grenades. DODIC is the Department of Defense Identification Code that is used to uniquely define each type of ammunition.

⁷ Annual numbers do not represent a mathematical sum of Weekend and 2-Week impacts. Weekend and 2-Week data represent the impacts if the MGTA is used for one of those periods, but Annual data is guided by the expected demand and limited by the historic resources available.

The ALARNG would be funded to implement the Army Integrated Training Area Management (ITAM) Program to manage long-range sustainability of the land. Army Regulation (AR) 350-4 establishes policy for the Army's ITAM program. This regulation defines Headquarters Department of the Army, Major Army Command, and Installation responsibilities, management requirements, and general guidance to implement ITAM. Specifically, ITAM funding is available for scientific analysis of training land use, maintenance, and improvements. The ITAM program would proactively identify destruction of vegetation or erosion of soils and fund trail maintenance, the construction of erosion controls, and revegetation.

Army 7th Special Forces Group (SFG) Airborne (A) (U.S. Air Force, 2007)

Ground-maneuvering requirements for the 7SFG(A) center around the need to provide training for a wide variety of activities such as reconnaissance, surveillance, visibility training, convoy training, etc. Ground-maneuver requirements do not include any live-fire activity, as all ammunition would be confined to the 7SFG(A) firing ranges. A maximum of 125 square kilometers (km^2) (48.26 mi^2) of area (not defined in any particular shape) would be required for one ground training mission. Infiltration/exfiltration training activities may involve any combination of ground operations, water operations, and air operations. The following summarizes the types of activities that would be included in the 7SFG(A) range training that does not involve the use of live fire.

Foot Movement

Ground training includes a number of activities, but is generally the movement of dismounted soldiers through wooded areas of the interstitial area. Troop movements are typically stealthy as units transit from one objective to another. Special Forces Teams usually operate in teams of up to 12 troops. To increase the realism of the training events, some blank small-arms ammunition, hand flares, smoke grenades, or other training ammunition are expended during certain operations. In almost all cases, ground training on foot involves movement under covert, clandestine conditions without leaving any evidence of troop presence. Troop movement also generally occurs in single file movement of a small group, so that large troop movements over a large land mass do not occur. Land navigation training may occur during daytime or nighttime and usually involves the use of a compass, maps, and global positioning system (GPS). Troop movement on foot may also be used for training in search and rescue, personnel recovery, and reconnaissance. Personnel movement may occur on established roads, along or across streams, through cleared areas, wooded areas, and on rare occasions through swamp environments. These types of activities would occur with teams of no more than 12 troops, and movements would occur in such limited frequency over the same area that the physical impact on the ground would be negligible.

Typical troop movement activity includes:

- Road March (done on existing roads for extended lengths of travel).
- 6- to 12-man team insertion/extractions from varying methods (parachute, boat infiltration, and helicopter). Insertions are clandestine activities. Regardless of how an insertion is accomplished, personnel would most often walk away.
- Clandestine movement by foot to training objective sites (most often culminating at firing ranges).
- Foot movement to firing ranges through the interstitial and on existing roads.
- Vehicle movement to firing ranges utilizing existing roads.

Aircraft and Vehicles

Aircraft and ground support vehicles are occasionally integrated into the training to deliver and retrieve the participating troops or provide support and logistics. Ground vehicle movement is normally restricted to the existing road and trail network, but some training integrates the use of all-terrain vehicles (ATVs) or small trucks. Airborne operations include the use of rotary or fixed-wing aircraft for the insertion, extraction, movement, or supplying of ground troops. This could include the delivery of paratroops or paradrops. Paratroops are personnel who jump from an aircraft and descend by parachute from varying altitudes. Paradrops are the delivery of equipment or supplies using parachutes. These equipment or supplies are palletized and rigged with multiple automatically deploying parachutes.

The 7SFG(A) would require the use of helicopter landing zones (HLZs) and parachute Drop Zones (DZs). The Eglin Range contains landing zones, HLZs, and parachute DZs within the interstitial area (the areas between test areas). These zones are established for user groups that conduct training and testing that integrate ground and air operations. Landing zones are used for touchdown and takeoff of fixed-wing and rotary military aircraft. HLZs are established for the landing and takeoff of military helicopters. HLZs may be improved surfaces such as concrete or asphalt; however, the majority of HLZs on the Eglin Reservation are cleared, grassy areas either on a test range or in the interstitial area. DZs are areas for inserting paratroops or paradropping equipment or palletized supplies. The 7SFG(A) would use existing HLZs and DZs. However, two new DZ locations have been proposed during the Range configuration integrated planning team (IPT) process.

Vehicle use is primarily on existing roads, though some off-road use may occur. Overall, there is minimal vehicle use associated with interstitial missions. The largest vehicle that may traverse off road is a HMMWV (1/4 ton truck). This vehicle comes in varying sizes and can accomplish an array of diverse tasks. The vehicles would not traverse in wetlands or swamps. Tasks that may require leaving existing roads include setting up remote communication relay sites. Often, this requires one to two vehicles traveling to a known point for limited mission-specific activity. Other tasks include “Zone Recce” where a series of vehicles may temporarily conceal themselves off the existing travel routes for a short period. Small ATVs would also be utilized and in most cases would support establishment of DZs, HLZs, and occasional insertion to a remote area for other on-foot activities.

The 7SFG(A) would utilize Combat Rubber Raiding Craft (Zodiac Boats). These Zodiac Boats would be utilized for water DZ support. This activity merely requires the boat to remain in a mobile position in order to retrieve paratroopers from the water. The watercraft would also be utilized for insertion into an area of operation. Personnel would come ashore on a river bank, bayshore, or beach shore and would clandestinely depart the area, leaving no trace of their presence. Boats may be abandoned at an insertion point and retrieved by varying means to include being towed back out to the water for pickup or hauled away by support personnel. Support personnel would hand carry boats to a vehicle-hauled trailer for movement out of the area via existing roads.

Bivouac

Troops use a number of different bivouac scenarios that vary from tents on concrete pads to primitive camping. Bivouac descriptions are given below and indicate the likeliness of the 7SFG(A) conducting these type of activities.

- No Bivouac: Training would normally include small teams, usually 12 men or less, that rarely halt movement for sufficient duration to establish a bivouac. The majority of the 7SFG(A) activities fall in this category. 7SFG(A) soldiers would not dig fighting positions under this category.
- Primitive Bivouac: On occasion units may establish primitive/temporary bivouac facilities and would not stay in the same location for more than 48 hours. It is a tactical standard for units to ensure that sites used for bivouac are left with no evidence of their use. As a minimum, the site should not reveal the number of personnel that occupied it or the duration of stay. In this context, significant effort is made to not impact the environment. Any other activities related to this scenario that are not included above in the “no bivouac” category would fall into this category.
- Temporary Tent Complex: Larger units with equipment and vehicles establish longer-term bivouac facilities in the open areas around auxiliary fields. These areas usually encompass larger unit staging areas and unit rear echelon support areas. Units using these sites make an effort to reduce the impacts on the environment for the same reasons as stated above; however, because of the equipment, this standard is not as easily attained. Once every six months, the support soldiers may have a small exercise with limited digging, grounding rods for generators and temporary set-up of communications antennae and vans. Once per year the Battalion or the Group HQ may have a 7- to 14-day exercise. Normally concertina is temporarily placed around medium-sized tents, but digging is not involved.
- Reusable Hard Stand: Some units’ training goals can be achieved using more established facilities. Auxiliary Fields 3 (Duke Field) and 5 (TA B-4) have often-used hardened bivouac sites. Hardstand tent pads and some framed structures exist at these bivouac sites. Water and electricity hook-ups are also provided. It is unlikely that the 7SFG(A) would conduct activities requiring such accommodations. However, should this type of facility be needed, existing sites can be used.

Regardless of the training type or bivouac, rations are meals-ready-to-eat (MREs) 90 percent of the time. 7SFG(A) support companies do not set up field kitchens to provide warm rations. However, any waste and other trash are bagged and transported to dumpsters for disposal or carried out in the individual soldier’s pack.

Table A-4 describes the equipment that would be utilized by the 7SFG(A) for water operations and ground maneuvering.

Table A-4. Estimated 7SFG(A) Equipment Requirements for Water Operations and Ground Maneuvering

| Equipment Type | Operation | Missions/Year | Hours/Year |
|--|-------------------------------|---------------|------------|
| Ground Vehicles | | | |
| <i>Wheeled</i> | | | |
| HMMWV (1-1/4 Ton) | Mobility Training* | 288 | 576 |
| | Live Fire Platform | 144 | 432 |
| | Zone Recce | 144 | 432 |
| HMMWV (Heavy) | Convoy Training | 40 | 80 |
| | SPT Live Fire | 20 | 60 |
| HMMWV (Expanded) | Commo Exercises | 20 | 60 |
| | Range Support | 3,665 | 29,323** |
| | DZ Support | 816 | 3,264** |
| 2-1/2 Ton Cargo Truck LMTV | DZ Support | 816 | 3,264** |
| | Boat Transport | 140 | 280 |
| | Convoy Training | 40 | 120 |
| | Live Fire Platform | 20 | 60 |
| 5 Ton Cargo LMTV | Exercise Support | 20 | 80 |
| | Ammo Transport | 200 | 200 |
| | Live Fire Platform | 20 | 60 |
| ATV/Motorcycle | Mobility Training | 288 | 576 |
| Watercraft | | | |
| Combat Rubber Raiding Craft (Zodiac Boats) | UWO Training (12 Scuba Teams) | 120 | 480 |
| | Water DZ Support | 20 | 60 |

HMMWV = high mobility multipurpose wheeled vehicle; SPT = support; DZ = drop zone; LMTV = light medium tactical vehicle; ATV = all-terrain vehicle; UWO = underwater ordnance; CAS = close air support

*Mobility training based on 72 12-man teams sharing the organic vehicles in the unit, and conducting four events per 12-man team at two hours per event.

**Range/DZ Support Hours includes sitting at the range after ammo and supply transport, and not always moving.

A.3 REFERENCES

Alabama Army National Guard (ALARNG), 2004. *Master Plan for the Alabama Army National Guard Cobb Training Site, Eglin Air Force Base, Florida*. October 2004.

U.S. Air Force, 2004. *Estuarine and Riverine Programmatic Environmental Assessment (PEA), Eglin AFB, FL*. June 2004.

U.S. Air Force, 2005a. *Interstitial Area Environmental Baseline Document*, Revision 1. Department of the Air Force, Air Armament Center, Eglin Air Force Base, Florida. March 2005.

U.S. Air Force, 2005b. *Santa Rosa Island Final Programmatic Environmental Assessment, Eglin Air Force Base, Florida*. March 2005.

U.S. Air Force, 2007a. *Alabama Army National Guard Implementation of a Portion of the Master Plan for Cobb Training Site Final Environmental Assessment, Eglin Air Force Base, Florida*. July 2007.

U.S. Air Force, 2007. *Proposed Implementation of the 2005 BRAC Decisions and Related Actions at Eglin Air Force Base Check-Draft Environmental Impact Statement (In Progress), Eglin Air Force Base, Florida*. September 2007.

U.S. Army, 1992. Training Circular 25-8, Training Ranges. 25 February 1992.

U.S. Army, 2004. Training Circular 25-1, Training Land. 16 March 2004.

This page is intentionally blank.

APPENDIX B

PROPOSED MANAGEMENT ACTIVITIES

PROPOSED MANAGEMENT ACTIVITIES

The Range Environmental Assessment was prepared with consideration that the following management requirements will be employed for all interstitial activities. Training activity leaders will be briefed on management requirements and the restrictions of operating procedures prior to conducting training activities. Training units are provided maps and specific instructions for staying on established roadways and outside of established minimum distances. The proponents are responsible for ensuring these management activities are adhered to.

Soils

To minimize the potential for impacts to soils in interstitial areas, the following measures will be employed:

- Any digging will require a Base Civil Engineering Work Clearance Request (AF Form 103) to be filled out and signed, and approval for a dig permit through Jackson Guard (96 CEG/CEVSN, 883-1192).
- Wheeled vehicles must remain on existing trails/roads, except for the Special Tactics units, which have been approved for off-road vehicle use. For permitted Special Tactics units off-road vehicle use, vehicles must traverse streams only at designated crossing points and vehicles must avoid driving in wetlands.
- Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams.
- For activities that require digging, such as the establishment of fighting positions, troops shall fill in holes once they are finished and cover them with pine straw or leaves to minimize erosion potential.
- Munitions cartridges and debris from ground burst simulators, flares, and smokes shall be picked up after the training mission has been completed.

Water Resources

The following management requirements minimize the potential for impacts to groundwater, wetlands, floodplains, and other surface water resources in interstitial areas:

- Do not extract over 500 gallons of water per day from the streams for any reason (U.S. Army Corps of Engineers, 2004).
- Do not alter natural flow patterns of streams by diverting water, causing siltation, or damming any portion of the stream or its tributaries.
- Wheeled vehicles must keep to existing trails/roads. For permitted off-road vehicle use (currently only Special Tactics units): do not drive vehicles in or across streams except at designated crossing points.
- Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams.

- Do not affect water purity either directly by releasing chemicals or metals into the streams or indirectly by releasing toxic aerosols within 300 feet of streams and within 1,500 feet of flatwoods salamander habitat (per Watershed Protection guidelines and as addressed in the Eglin AFB Long-term Vegetation Control EA and Biological Assessment). Additionally, no chemicals or metals shall be released in wind speeds greater than 10 knots.
- Digging will be kept to a minimum—no holes deeper than 3 feet will be dug, especially within 100 feet of any stream.
- No new cleared areas (bivouac, fighting position, etc.) shall be established within 100 feet of any water body, wetland, or floodplain, or on steep slopes.
- When use of the fighting holes or other cleared areas is complete, they shall be filled back in and covered with nearby pine straw or leaves to minimize the potential for runoff.
- No water shall be withdrawn from Okaloosa darter streams.
- Activities at TA D-84 should not occur within 100 feet of the shoreline except at established access points.
- Debris removal and disposal of solid debris from blanks, chaff, smokes, simulators, and flares shall be conducted in accordance with Eglin AFB operating procedures.
- Disposal/discharge of hazardous materials to the ground is prohibited.
- For permitted off-road vehicle use (currently only Special Tactics units): Vehicles shall avoid driving in wetlands, floodplains, and on steep slopes.
- Large troop movements on steep slopes and in wetlands shall be minimized.
- All types of smokes, simulators, and flares shall not be used within 100 feet of water bodies and shall never be thrown directly into a water body.
- Pyrotechnics use shall follow Eglin AFB's Wildfire Specific Action Guide Restrictions.
- User groups shall be provided basic guidance in wetland identification and be given instructions to avoid wetlands.

In addition, management requirements for the use of bivouac sites on Auxiliary Fields by large groups of personnel are as follows:

- Assure that no facilities (kitchens, latrines, showers, etc.) are located within 60 meters (approximately 200 feet) of any stream.
- Police the area afterward for trash/debris.
- Collect all residue and wash waters from field kitchens and truck to Eglin AFB for proper disposal.
- Dispose of wastewater from field showers in accordance with Florida Administrative Code (FAC) Chapter 64E-6 (Standards for Onsite Sewage Treatment and Disposal Systems) for systems with a flow rate up to 10,000 gallons per day and FAC

Chapter 62-600 (Domestic Wastewater Facilities) for systems with a flow rate of over 10,000 gallons per day.

Noise

To minimize the potential for impacts from noise in interstitial areas, the following management requirements will be employed:

- No small-arms fire shall occur within 4,000 feet of the Eglin AFB Reservation boundary.

Chemical Materials

To minimize the potential for impacts from chemical materials in interstitial areas, the following management requirements will be employed:

- Police the bivouac area afterwards for trash/debris.
- Cleanup of smoke debris is mandatory.
- Areas in which small arms with blank ammunition is used must be policed to pick up debris. Blank cartridges are turned in to be recycled.
- All use of pesticides must be approved and reported to CE Pest Management (AFI 32-1053, *Pest Management Program*).

Biological Resources

To minimize the potential for impacts to biological resources in interstitial areas, the following management requirements will be employed:

General:

- Eglin AFB Wildfire Specific Action Guide Restrictions regarding forest fire danger ratings for pyrotechnics use will be adhered to.
 - Per the Specific Action Guide for wildfire readiness, if Fire Danger is:
 - Moderate - No restrictions on pyrotechnics. A fire watch is required to be posted for a minimum of 20 minutes after use of pyrotechnics has been completed.
 - High - Use caution with pyrotechnics and post a fire watch for a minimum of 30 minutes after use of pyrotechnics has been completed.
 - Very High - Restrict pyrotechnics to hand-thrown simulators or smoke grenades. NO FLARES below 1000' AGL. Limit BDU 33s and other munitions that may start fires to "Safe" areas. Use simulators or grenades only on roads or in pits. Cleared areas for pyrotechnics should be a minimum of 1.5 times the blast radius.
 - Extreme - NO PYROTECHNICS allowed without prior approval from the Wildland Fire Program Manager or their designee at Eglin AFB Natural Resources (Jackson Guard) (96 CEG/CEVSNP, 882-6233 or FAX 882-5321).

- Fire Danger can be determined by calling the dispatch office or on the Environmental Management website in the Fire Management Section.
- Immediately notify Eglin AFB Fire Department Dispatch of any wildfire.
- The use of all pyrotechnic devices will be under the supervision of qualified personnel.
- All missions planning to employ flares will be scheduled as a hot (capable of utilizing live fire) mission.
- Release flares at altitudes that will ensure complete burnout prior to reaching the surface. Minimum release altitude is 500 feet above ground level when not over authorized test areas.
- Allow no releases of flares for air operations when surface winds exceed 15 knots or when the fire danger level prohibits use of flares.
- In order to protect training objectives and personnel from wildland fires (wildfires and prescribed fires) and prevent conflicts between fire management operations and training operations, coordinate with Jackson Guard's Fire Management Element (96 CEG/CEVSNP, 882-6233) on the following:
 - Notify 96 CEG/CEVSNP when a new area is activated or deactivated in order to keep wildland fire "Suppression Considerations" map current.
 - Provide GPS coordinates for all training areas and activities to include foxholes, fighting positions, ammunition (including blanks), trip flares, concertina wire, and other types of residue.
 - Provide GPS coordinates of all combustible "objectives" built and/or placed in the interstitial area that need to be protected from fires.
 - Provide information that will allow protection of training infrastructure from wildland fires.
- Restrict access to Outstanding Natural Areas (ONAs) as listed in Eglin AFB's Integrated Natural Resources Management Plan (U.S. Air Force, 2007). The only exception is Whitmier Island, which is required for U.S. Army Ranger training.
- No bivouac or digging activities shall occur in wetland ONAs.
- If an alternate nonsensitive area may be used, restrict troop movement on foot in sensitive sites most susceptible to impact.
- Conduct post-mission site surveys to ensure debris has been removed. All users must coordinate with the 96 CEG/CEVSN to schedule a post mission site survey.
- Tree cutting is limited to sand pine, live oak (for tree thinning only), and scrub oak. Long-leaf pines may not be cut down for any reason.
- Do not drive nails or other objects into trees for any reason, unless there is a special authorization to do so from 96 CEG/CEVSN.
- All campsites will be returned to as natural an appearance as possible.

Wildlife:

- Do not allow military activities to disturb wildlife food plots.
- Ensure that all military activities are in compliance with the hunting, trapping, and fishing regulations established by the Natural Resources Section and the Florida Fish and Wildlife Conservation Commission (FWC), unless specific authorization is granted by the Natural Resources Section and the FWC.
- Care will be taken to minimize erosion into streams and to ensure that these streams are kept as clean as possible. Altering of stream flow is prohibited.
- Unless specifically authorized otherwise, survival-training personnel must comply with the Natural Resources Section regulations concerning the following:
 - The type of wildlife species that are allowed to be taken
 - Bag limits
 - Hunting, trapping, and fishing seasons
 - Allowable hunting ammunition and trapping equipment
 - Specific regulations established for each of Eglin AFB's hunting management units
- Troops shall be alert to the potential presence of Florida black bears on roads and shall take measures to avoid injury to these animals.
- Troops shall be alert to the potential presence of eastern indigo snakes in training areas. If an eastern indigo snake is encountered, allow the snake to leave the area undisturbed. Report all sightings of eastern indigo snakes to Eglin AFB Natural Resources Section.
- Do not dig within 25 feet of any gopher tortoise burrow.
- Digging, vegetation cutting, off-road vehicle use and other ground-disturbing activities should not occur within 1,500 feet of flatwoods salamander ponds, within 200 feet of Okaloosa darter streams, or within 100 feet of Florida bog frog streams.
- In an effort to control the introduction of invasive species, all out-of-area equipment such as tracked vehicles and/or boats shall be inspected prior to deployment in the field. Vehicles and equipment must be cleaned in accordance with Armed Forces Pest Management Board Technical Guide No. 31 Retrograde Washdowns: Cleaning and Inspection Procedures (<http://www.afpmb.org/pubs/tims/tg31/tg31.pdf>), prior to being used on Eglin AFB.

Red-cockaded Woodpecker:

- The locations of RCW cavity trees have been input into a geographic information system (GIS) format and are surveyed and updated by the Eglin AFB Natural Resources Section.
- Establish a minimum radius of 500 feet from RCW cavity trees for helicopter landing zones.
- Report unmarked RCW cavity trees to the Natural Resources Section.

- Interstitial users shall follow the U.S. Army management requirements for minimizing potential impacts to RCWs. Table B-1 below lists selected U.S. Army requirements that may apply to Eglin AFB interstitial mission activities (U.S. Army, 2006). In 2003, the U.S. Marines agreed to adhere to these management requirements (U.S. Marine Corps, 2003), and 200-foot buffers were established around selected RCW cavity trees on Eglin AFB to facilitate their observance. In addition, the following U.S. Army management requirements must be followed:
 - Continue monitoring of RCWs in the training areas.
 - Within 200 feet of marked cavity trees allow only military activities of a transient nature (less than two hours occupation).
 - Within the 200-foot buffer, prohibit bivouacking, excavating, digging, and establishing command posts.
 - Prohibit military vehicles from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road or maintained trail or firebreak.
 - For protected clusters in areas of the Reservation where ground training would occur, mark buffers for all suitable cavity and cavity start trees prior to mission initiation. Post warning signs at reasonable intervals along the 200-foot perimeter of cavity trees facing to the outside of the buffer zone and along roads, maintained trails and firebreaks, and other likely entry points into the buffer zone.
 - Immediately report to Range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; Range control must notify NRS biologists immediately.
 - Within 3 working days of notification, the Eglin NRS would reprovision a cavity tree if one was destroyed due to training activity.
 - If a unit caused damage to training land within a cluster, the responsible unit would coordinate with the NRS to repair damage as soon as practicable (normally within 3 working days of notification).
 - All digging for military training activities in RCW habitat management units must be filled and inspected by the proponent upon completion of training.

Safety

To minimize the potential for impacts to safety in the interstitial areas, the following management requirements will be employed:

- Assault zones used by the Air Force must be surveyed and designated as safe for use. This active status is temporary, and zones must be re-surveyed.
- Live fire is restricted to test ranges. Blank ammunition use and pyrotechnics may be permitted in the interstitial area according to test directive.
- Pyrotechnic devices that dud will not be disturbed, but will be flagged. Explosive Ordnance Disposal (EOD) will be notified for dud disposal.

- Smoke grenades are handled by instructors only.
- Smoke grenades are thrown away from personnel.
- Minimum altitude for illumination flare deliveries is 3,000 feet above ground level.
- Flares may be employed over the Eglin AFB Reservation only. Avoid expending flares over populated areas, personnel, or structures.

Table B-1. Selected Army Training Activities Allowed/Not Allowed Within 200 Feet of Marked RCW Cavity Tree

| Mission Activity | Allowed |
|---|---------|
| Maneuver and Bivouac: | |
| Hasty defense, light infantry, hands and hand tool digging only, no deeper than 2 feet, 2 hours MAX | Yes |
| Hasty defense, mechanized infantry/armor | No |
| Deliberate defense, light infantry | No |
| Deliberate Defense, mechanized infantry/armor | No |
| Establish command post, light infantry | No |
| Establish command post, mechanized infantry/armor | No |
| Assembly area operations, light infantry/mech infantry/armor | No |
| Establish CS/CSS sites | No |
| Establish signal sites | No |
| Foot Transit through the Cluster | Yes |
| Wheeled Vehicle Transit through the Cluster ⁽¹⁾ | Yes |
| Armored Vehicle Transit through the Cluster ⁽¹⁾ | Yes |
| Cutting Natural Camouflage, Hard Wood Only | Yes |
| Establish Camouflage Netting | No |
| Vehicle Maintenance for No More than 2 Hours | Yes |
| Weapons Firing: | |
| 7.62 mm and Below Blank Firing | Yes |
| .50 cal Blank Firing | Yes |
| Artillery firing point/position | No |
| MLRS firing position | No |
| All others | No |
| Noise: | |
| Generators | No |
| Artillery/Hand Grenade Simulators | Yes |
| Hoffman type devices | Yes |
| Pyrotechnics/Smoke: | |
| CS/Riot Agents | No |
| Smoke, Haze Operations Only, Generators or Pots, Fog Oil and/or Graphic Flakes ⁽²⁾ | Yes |
| Smoke Grenades | Yes |
| Incendiary Devices to Include Trip Flares | Yes |
| Star Clusters/Parachute Flares | Yes |
| HC Smoke of any Type | No |
| Digging: | |
| Tank Ditches | No |
| Deliberate Individual Fighting Positions | No |
| Crew-served Weapons Fighting Positions | No |
| Vehicle Fighting Positions | No |

Table B-1. Selected Army Training Activities Allowed Within 200 Feet of Marked RCW Cavity Tree Cont'd

| Mission Activity | Allowed |
|--|---------|
| Other Survivability/Force Protection Positions | No |
| Vehicle Survivability Positions | No |

Source: U.S. Army, 2006

1. Vehicles will not get any closer than 50 feet of a marked cavity tree unless on existing roads, trails, or firebreaks.
2. Smoke generators and smoke pots will not be set up within 200 feet of a marked cavity tree, but the smoke may drift through the 200-foot circle around a cavity tree.

Land Use

To minimize the potential for impacts to land use in interstitial areas, the following management requirements will be employed:

- Maximize mission activity into areas already permanently closed to the public to reduce restricted access.
- Report violations of any recreation rules to the Natural Resources Section or the security police.
- All units desiring to deploy chaff must submit a mission request in advance and have prior approval and scheduling before dispensing chaff. Eglin AFB Mission Control may require a test dispersal to determine wind effect. Wind conditions and traffic complexity may make it necessary for Air Traffic Control to disapprove the chaff drop.
- Chaff drops in R2915A, north of Auxiliary Field 6 (Camp Rudder) and west of A-77, are limited to 2,000 feet and below. All other areas in R2915A are limited to 4,000 feet and below.
- No chaff is permitted in the North/South or East/West visual flight route (VFR) corridors.
- In all other areas of Eglin AFB restricted airspace, chaff is limited to 2,000 feet and below.

Cultural Resources

To minimize the potential for impacts to cultural resources in interstitial areas, the following management requirements will be employed:

All Ground Activity within the Interstitial Area

- Implementation of erosion and sedimentation management requirements as addressed in the *Soils* section.
- Buffer areas surrounding protected cultural resources will be avoided.
- When cultural resources are inadvertently discovered, all ground-disturbing activities will cease and Eglin's Cultural Resources Branch (96 CEG/CEVH) will be notified immediately.
- Troops would be provided training to become familiar with use/access restrictions. In addition the 96 CEG/CEVH can provide a Cultural Resource Constraint GIS Layer to

show areas which are considered high probability for cultural resources or should be avoided due to known resources.

- Troop movements, vehicle movements, and other activities on the ground such as digging and vegetation cutting have the potential to disturb archaeological sites through ground disturbance and damage to vegetation that anchors the soils. These types of potentially ground-disturbing activities will be coordinated with 96 CEG/CEVH.
- Personnel would be prohibited from gathering visible artifacts from the ground surface. Any archaeological artifacts discovered must be left in place and the location reported immediately to 96 CEG/CEVH.
- No vehicles or bivouac sites would be permitted within the buffered area around National Register of Historic Places-eligible (NRHP-eligible) and potentially eligible sites or within 200 feet of marked cemeteries or human burials.
- Off-road driving shall be restricted in high sensitivity areas.
- Duke Field, Camp Rudder, and Choctaw Field have sensitive cultural areas. Any training activity involving ground disturbance would require prior notification to 96 CEG/CEVH.

Specific Requirements for the Alabama Army National Guard (ALARNG)

- For the Small Arms Range Complex (SARC), no clearing, grading, or construction would occur within 100 feet of cultural resource buffer zones.
- At the cantonment area, a vegetated buffer of at least 100 feet would remain around nearby stream and wetland areas as well as around cultural resource buffer zones.
- Fifteen eligible or potentially eligible sites are located within the Military Ground Training Area (MGTA). The ALARNG completed archaeological surveys of the MGTA in December 2006. As a result of these surveys, the ALARNG will avoid buffer zones during training exercises around the nine eligible and six potentially eligible archaeological sites as well as Guard Management Area 6.

REFERENCES

U.S. Air Force, 2007. *Integrated Natural Resources Management Plan*, Revision 1. Department of the Air Force, Eglin Air Force Base, Florida. September 2007.

U.S. Army, 2006. *Management Guidelines for the Red-cockaded Woodpecker on Army Installations*. Ft. Stewart, Georgia.

U.S. Army Corps of Engineers, 2004. *Unit Environmental Coordinator (UEC) Environmental Handbook*, Revision 2, Eglin Air Force Base. Prepared by CH2M Hill. December 2004.

U.S. Marine Corps, 2003. Final Environmental Assessment for Amphibious Ready Group/Marine Expeditionary (ARG/MEU) Training at Eglin AFB. Eglin AFB. 2003.

This page is intentionally blank.

APPENDIX C

RELEVANT LAWS, REGULATIONS, AND POLICIES

RELEVANT LAWS, REGULATIONS, AND POLICIES

The Range Environmental Assessment was prepared with consideration and compliance of relevant environmental laws, regulations, and policies; including federal and state laws and regulations, Department of Defense (DoD) directives, and Air Force instructions. A brief description of specific laws and regulations that legally define issues of compliance associated with the mission activities of this document are outlined below.

General

42 USC 4321 et seq; 1969; National Environmental Policy Act of 1969 (NEPA); Requires that federal agencies (1) consider the consequences of an action on the environment before taking the action and (2) involve the public in the decisionmaking process for major Federal actions that significantly affect the quality of the human environment.

Executive Order 12372; 14-Jul-82; Intergovernmental Review of Federal Programs; Directs federal agencies to inform states of plans and actions, use state processes to obtain state views, accommodate state and local concerns, encourage state plans, and coordinate states' views.

Executive Order 12856; 3-Aug-93; Right to Know Laws and Pollution Prevention Requirements; Directs all Federal agencies to incorporate pollution planning into their operations and to comply with toxic release inventory requirements, emergency planning requirements, and release notifications requirements of EPCRA.

Executive Order 12898; 11-Feb-94; Environmental Justice; Directs federal agencies to identify disproportionately high and adverse human health or environmental impacts resulting from programs, activities or policies on minority populations.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention.

Air Force Instruction 32-7045; 1-Apr-94; Environmental Compliance and Assessment; Implements AFPD 32-70 by providing for an annual internal self-evaluation and program management system to ensure compliance with Federal, State, local, DoD, and Air Force environmental laws and regulations.

32 CFR 989; 1-Jul-01; Environmental Impact Analysis Process (EIAP)--; This regulation provides a framework for how the Air Force is to comply with NEPA and the CEQ regulations.

Air Force Instruction 32-7062; 1-Apr-94; Air Force Comprehensive Planning; Implements AFPD 32-70 by establishing Air Force Comprehensive Planning Program for development of Air Force Installations, ensuring that natural, cultural, environmental, and social science factors are considered in planning and decision making.

Physical Resources

Air Quality

42 USC 7401 et seq.; 40 CFR Parts 50 & 51; Clean Air Act, National Ambient Air Quality Standards (CAA, NAAQS); Emission sources must comply with air quality standards and regulations established by federal, state, and local regulatory agencies.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements Clean Air Act.

Air Force Instruction 32-7040; 9-May-94; Air Quality Compliance; This AFI sets forth actions for bases to implement to achieve and maintain compliance with applicable standards for air quality compliance, and responsibilities for who is to implement them. Includes requirements for NEPA and RCRA as well as CAA.

F.S. Ch. 403, Part I; Florida Air and Water Pollution Control Act; Regulates air pollution within the state.

FAC Chap. 62-204; Florida State Implementation Plan, with Ambient Air Quality Standards and PSD Program; Establishes state air quality standards and requirements for maintaining compliance with NAAQS.

FAC Chap. 62-213; Operation Permits for Major Sources of Air Pollution; Adopted Prevention of Significant Deterioration (PSD) permit program, designed to control the impact of economic growth on areas that are already in attainment.

Air Space Use

49 USC 106 & Subtitle VII; 1997; Federal Aviation Act of 1958 (FAA); Created the FAA and establishes administrator with responsibility of ensuring aircraft safety and efficient utilization of the National Airspace System.

14 CFR Part 71; 1997; Federal Aviation Regulation (FAR); Defines federal air routes, controlled airspace, and flight locations for reporting position.

14 CFR Part 73; 1997; Federal Aviation Regulation (SFAR No. 53); Defines and prescribes requirements for special use airspace.

14 CFR Part 91; 1997; Federal Aviation Regulation (FAR); Governs the operation of aircraft within the United States, including the waters within 3 nautical miles of the U.S. Coast. In addition, certain rules apply to persons operating in airspace between 3 and 12 nautical miles from the U.S. Coast.

Land Resources

16 USC 670a to 670o; 1997; Sikes Act, Conservation Programs on Military Reservations; DoD, in a cooperative plan with DOI and State, opens AF bases to outdoor recreation, provides the state with a share of profits from sale of resources (timber), and conserves and rehabilitates wildlife, fish, and game on each reservation. AF is to manage the natural resources of its reservations to provide for sustained multipurpose use and public use.

16 USC 1451 to 1465; 1997; Coastal Zone Management Act of 1972 (CZMA); Federal agency activities in coastal zones should be consistent with state management plans to preserve and protect coastal zones. Lands for which the Federal Government has sole discretion or holds in trust are excluded from the coastal zone.

USC 1701 et seq., (Public Law 94-579; 1997; Federal Land Policy and Management Act of 1976 (FLPMA); Provides that the Sec. of Interior shall develop land use plans for public lands within BLM jurisdiction to protect scientific, scenic, historical, ecological, environmental and archeological values, and to accommodate needs for minerals, food and timber.

16 USC 3501 to 3510; 1997; Coastal Barrier Resources Act (CBRA); Limits Federal expenditure for activities on areas within the Coastal Barrier Resources System. An exception is for military activities essential to national security, after the Federal agency consults with the Secretary of the Interior.

Air Force Instruction 32-7062; 1-Apr-94; Air Force Comprehensive Planning; Implements AFPD 32-70 by establishing Air Force Comprehensive Planning Program for development of Air Force Installations, ensuring that natural, cultural, environmental, and social science factors are considered in planning and decision making.

Air Force Instruction 32-7063; 31-Mar-94; Air Installation Compatible Use Zone Program (AICUZ); Provides a framework to promote compatible development within area of AICUZ area of influence and protect Air Force operational capability from the effects of land use which are incompatible with aircraft operations.

Air Force Instruction 32-7064 22-Jul-94; Integrated Natural Resources Management; Provides for development of an integrated natural resources management plan to manage the installation ecosystem and integrate natural resources management with the rest of the installation's mission. Includes physical and biological resources and uses.

Noise

42 USC 4901 to 4918, Public Law 92-574; 1972; Noise Control Act of 1972 (NCA); Provides that each Federal agency must comply with Federal, State, interstate and local requirements for control and abatement of environmental noise.

49 USC 44715; 1997; Controlling Aircraft Noise and Sonic Boom; Provides that the FAA will issue regulations in consultation with the USEPA to control and abate aircraft noise and sonic boom.

Executive Order 12088; 1978; Federal Compliance with Pollution Control Standards; Requires the head of each executive agency to take responsibility for ensuring all actions have been taken to prevent, control, and abate environmental (noise) pollution with respect to federal activities.

Air Force Instruction 32-7063; 1-Mar-94; Air Installation Compatible Use Zone Program (AICUZ); The AICUZ study defines and maps noise contours. Update when noise exposure in air force operations results in a change of Day-Night Average Sound Level of 2 decibels (dBs) or more as compared to the noise contour map in the most recent AICUZ study.

Water Resources

33 USC 426, 577, 577a, 595a; 1970; River and Harbor Act of 1970 (RHA); Keeps navigable waterways open, authorizing the Army Corps of Engineers to investigate and control beach erosion and to undertake river and harbor improvements.

33 USC 1251 et seq.; 1997; Clean Water Act (CWA) (Water Pollution Prevention and Control Act, FWPCA); In addition to regulating navigable water quality, the CWA establishes NPDES permit program for discharge into surface waters and storm water control; Army Corps of Engineers permit and state certification for wetlands disturbance; regulates ocean discharge; sewage wastes control; and oil pollution prevention.

33 USC 1344-Section 404; 1997; Federal Water Pollution Control Act/Clean Water Act (FWPCA/CWA), Dredged or Fill Permit Program; Regulates development in streams and wetlands by requiring a permit from the Army Corps of Engineers for discharge of dredged or fill material into navigable waters. A Section 401 (33 USC 1341) Certification is required from the State as well.

42 USC 300f et seq.; 1997; Safe Drinking Water Act (SDWA); EPA-Requires the promulgation of drinking water standards, or MCLs, which are often used as cleanup values in remediation; establishes the underground injection well program; and establishes a wellhead protection program.

42 USC 6901 et seq.; 29-May-05; Resource Conservation and Recovery Act of 1976 (RCRA); Establishes standards for management of hazardous waste so that water resources are not contaminated: RCRA Corrective Action Program requires cleanup of groundwater that has been contaminated with hazardous constituents.

42 USC 9601 et seq., Public Law 96-510; 11-Dec-80; Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA); Establishes the emergency response and remediation program for water and groundwater resources contaminated with hazardous substances.

Executive Order 12114, 44 FR, No. 62; 01-04-79; Environmental Effects Abroad of Major Federal Actions. Activities outside the jurisdiction of the United States which significantly harm the natural or physical environment shall be evaluated. An EIS shall be prepared for major federal actions having significant environmental effects within the global commons (i.e., Antarctica, oceans).

Department of Defense Directive 6050.7; 03-31-79; Environmental Effects Abroad of Major Department of Defense Actions. Implements Executive Order 12114.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements Clean Water Act, Safe Drinking Water Act, and Water Quality Act of 1987.

Air Force Instruction 32-7006 04-29-94; Environmental Program in Foreign Countries; Implements DoD Directive 6050.7.

Air Force Instruction 32-7041; 13-May-94; Water Quality Compliance; Instructs the Air Force on maintaining compliance with the Clean Water Act; other federal, state, and local environmental regulations; and related DoD and AF water quality directives.

Air Force Instruction 32-7064; 22-Jul-94; Integrated Natural Resources Management; Sets forth requirements for addressing wetlands, floodplains and coastal and marine resources in an integrated natural resources management plan (INRMP) for each installation.

F.S. Chaps. 253, 258; Florida Aquatic Preserves Act; Establishes state aquatic preserves.

F.S. Chap. 403, Part I; Florida Air and Water Pollution Control Act; establishes the regulatory system for water resources in the State of Florida.

FAC Chap. 62-302; Surface Water Quality Standards; Classify Florida surface waters by use. Identify Outstanding Florida Waters.

FAC Chap. 62-312; Florida Dredge and Fill Activities; Requires a State permit for dredging and filling conducted in, on, or over the surface waters of the State.

Biological Resources

Animal Resources

16 USC 668 to 668d; 1995; Bald and Golden Eagle Protection Act (BGEPA); Makes it illegal to take, possess, sell, barter, offer to sell, transport, export or import Bald and Golden eagles in the United States. Taking may be allowed for scientific, exhibition, or religious purposes, or for seasonal protection of flocks.

16 USC 703 - 712; 1997; Migratory Bird Treaty Act (MBTA); Makes it illegal to take, kill or possess migratory birds unless done so in accordance with regulations. An exemption may be obtained from the Dept. of the Interior for taking a listed migratory bird.

16 USC 1361 et seq.; 1997; Marine Mammal Protection Act of 1972, as amended (MMPA); Makes it illegal for any person to “take” a marine mammal, which term includes significantly disturbing a habitat, unless activities are conducted in accordance with regulations or a permit.

Air Force Instruction 32-7064; 22-Jul-94; Integrated Natural Resources Management; Explains how to manage natural resources on Air Force property, and to comply with Federal, State, and local standards for resource management.

Executive Order 13112; 1999; Instructs federal agencies to monitor for, control, and prevent the introduction of non-native, invasive species of plants and animals.

Executive Order 13186; 2001; Directs federal agencies whose actions may affect migratory birds to establish and implement a Memorandum of Understanding with the U.S. Fish and Wildlife Service (USFWS) to promote the conservation of migratory birds.

DoD and USFWS Memorandum of Understanding (MOU); 2006; Requires the DoD to acquire permits for normal and routine operations, such as installation support functions, that may result in pursuit, hunting, taking, capturing, killing, possession, or transportation of any migratory bird.

50 CFR 21; 2007; Exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities, except in cases where an activity would likely cause a significant adverse effect on the population of a migratory bird species. In this situation, the Armed Forces, in cooperation with the USFWS, must develop and implement conservation measures to mitigate or minimize the significant adverse impacts.

Threatened & Endangered Species

16 USC 1361 et seq. Public Law 92-574; 1997; Marine Mammal Protection Act of 1972, as amended (MMPA); Makes it illegal for a person to “take” a marine mammal, which term includes significantly disturbing the habitat, unless done in accordance with regulations or a permit.

16 USC 1531 to 1544-16 USC 1536(a); 1997; Endangered Species Act 1973 (ESA); Federal agencies must ensure their actions do not jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify the habitat of such species and must set up a conservation program.

50 CFR Part 402; Endangered Species Act Interagency Cooperation; These rules prescribe how a Federal agency is to interact with either the FWS or the NMFS in implementing conservation measures or agency activities.

50 CFR Part 450; Endangered Species Exemption Process; These rules set forth the application procedure for an exemption from complying with Section 7(a)(2) of the ESA, 16 USC 1536(a)(2), which requires that Federal agencies ensure their actions do not affect endangered or threatened species or habitats.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements Endangered Species Act.

Air Force Instruction 32-7064; 22-Jul-94; Integrated Natural Resources Management; This AFI directs an installation to include in its INRMP procedures for managing and protecting endangered species or critical habitat, including State-listed endangered, threatened or rare species; and discusses agency coordination.

Human Safety

29 CFR 1910.120; Occupational Safety and Health Act, Chemical Hazard Communication Program (OSHA); Requires that chemical hazard identification, information and training be available to employees using hazardous materials and institutes material safety data sheets (MSDS) which provide this information.

Department of Defense Instruction 6055.1; Establishes occupational safety and health guidance for managing and controlling the reduction of radio frequency exposure.

Department of Defense Flight Information Publication; Identifies regions of potential hazard resulting from bird aggregations or obstructions, military airspace noise sensitive locations, and defines airspace avoidance measures.

Air Force Instructions 13-212v1 and v2; 1994; Weapons Ranges and Weapons Range Management; Establishes procedures for planning, construction, design, operation, and maintenance of weapons ranges as well as defines weapons safety footprints, buffer zones, and safest procedures for ordnance and aircraft malfunction.

Air Force Instruction 32-2001; 16-May-94; The Fire Protection Operations and Fire Prevention Program; Identifies requirements for Air Force fire protection programs (equipment, response time, and training).

Air Force Instruction 32-7063; 1-Mar-94; Air Installation Compatible Use Zone Program (AICUZ). The AICUZ Study defines and maps accident potential zones and runway clear zones around the installation, and contains specific land use compatibility recommendations based on aircraft operational effects and existing land use, zoning and planned land use.

Air Force Manual 91-201; 12-Jan-96; Explosives Safety Standards; Regulates and identifies procedures for explosives safety and handling as well as defining requirements for ordnance quantity distances, safety buffer zones, and storage facilities.

Air Force Instruction 91-301; 1-Jun-96; Air Force Occupational and Environmental Safety, Fire Protection and Health (AFOSH) Program; Identifies occupational safety, fire prevention, and health regulations governing Air Force activities and procedures associated with safety in the workplace.

Habitat Resources

Executive Order 11990; 24-May-77; Protection of Wetlands; Requires federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in their activities. Construction is limited in wetlands and requires public participation.

Executive Order 11988; 24-May-77; Floodplain Management; Directs Federal agencies to restore and preserve floodplains by performing the following in floodplains: not supporting development; evaluating effects of potential actions; allowing public review of plans; and considering in land and water resource use.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements Executive Order 11988 and 11990.

*Anthropogenic Resources**Hazardous Materials*

7 USC 136 et seq., Public Law 92-516; 1997; Federal Insecticide, Fungicide, and Rodenticide Act Insecticide and Environmental Pesticide Control (FIFRA); Establishes requirements for use of pesticides that may be relevant to activities at Eglin Air Force Base.

42 USC Sect. 2011 - Sect. 2259; Atomic Energy Act (AEA); Assure the proper management of source, special nuclear, and byproduct material.

42 USC 6901 et seq.; 1980; Resource Conservation and Recovery Act of 1976 and Solid Waste Disposal Act of 1980 (RCRA); Subchapter III sets forth hazardous waste management provisions; Subchapter IV sets forth solid waste management provisions; and Subchapter IX sets forth underground storage tank provisions; with which Federal agencies must comply.

42 USC 9601 et seq., Public Law 96-510; 1997; Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA); Establishes the liability and responsibilities of federal agencies for emergency response measures and remediation when hazardous substances are or have been released into the environment.

42 USC 11001 to 11050; Emergency Planning and Community Right-to-Know Act (EPCRA); Provides for notification procedures when a release of a hazardous substance occurs; sets up community response measures to a hazardous substance release; and establishes inventory and reporting requirements for toxic substances at all facilities.

42 USC 13101 to 13109; 1990; Pollution Prevention Act of 1990 (PPA); Establishes source reduction as the preferred method of pollution prevention, followed by recycling, treatment, then disposal into the environment. Establishes reporting requirements to submit with EPCRA reports. Federal agencies must comply.

Air Armament Center Plan 32-3; January 2004; Asbestos Management Plan; This plan establishes procedures for the Eglin Air Force Base (AFB) facility asbestos management program. It contains the policies and procedures used in controlling the health hazards created by asbestos containing materials (ACM), and the procedures used in ACM removal required to protect the health of personnel and to comply with applicable federal, state, and Air Force laws and inspections.

Air Armament Center Plan 32-4; January 2004. Lead-Based Paint Management Plan; This plan establishes procedures for the Eglin AFB lead- based paint management program. It contains policies and procedures used in controlling health hazards from exposure to lead-based based paint.

Air Armament Center Plan 32-7; February 2003; Integrated Solid Waste Management Plan; The Eglin AFB Integrated Solid Waste Management Plan documents guidance and procedures with regard to regulatory compliance in the handling, reduction, recycling and disposal of solid waste. It contains requirements necessary to reach the mandated incremental waste diversion goal of 40 percent diversion of municipal solid waste from landfill disposal

by fiscal year (FY) 2005. These policies and procedures are designed to preserve landfill space, increase recycling and reuse, address revenues and cost avoidance, provide pollution prevention alternatives and promote Affirmative Procurement. This plan draws from the aspects of two programs, the Integrated Solid Waste Management Program (ISWMP) and the Qualified Recycling Program (QRP).

Air Armament Center Plan 32-9; February 2003; Hazardous Materials Management Plan; The Eglin AFB Hazardous Material Management Plan (HMMP) documents existing policy and procedures for organizations requesting, procuring, issuing, handling, storing and disposing of hazardous material (HM) in accomplishment of the Air Armament Center (AAC) mission. These policies provide guidance for compliance with federal, state, and local occupational safety, health, and environmental regulations.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Provides for developing and implementing an Air Force Environmental Quality Program composed of four pillars: cleanup, compliance, conservation and pollution prevention. Implements Resource Recovery and Conservation Act, Comprehensive Environment Response Compensation and Liability Act of 1980, Emergency Planning and Community Right-to-Know Act, Pollution Prevention Act, Executive Order 12088, Executive Order 12777, and Executive Order 12586. Implements DoD Instruction 4120.14, DoD Directive 4210.15, and DoD Directive 5030.41.

Air Armament Center Instruction 32-7003; 26July2004; Hazardous Waste Management; This instruction is intended to provide a framework for complying with environmental standards applicable to Hazardous Waste (HW), Universal Waste (UW, Special Waste (SW) and used petroleum products on Eglin AFB.

Air Force Instruction 32-7020; 19-May-94; The Environmental Restoration Program; Introduces the basic structure and components of a cleanup program under the Defense Environmental Restoration Program. Sets forth cleanup program elements, key issues, key management topics, objectives, goals, and scope of the cleanup program.

Air Force Instruction 32-7042; 12-May-94; Solid and Hazardous Waste Compliance; Provides that each installation must develop a hazardous waste (HW) and a solid waste (SW) management plan; characterize all HW streams; and dispose of them in accordance with the AFI. Plans must address pollution prevention as well.

Air Force Instruction 32-7080; 12-May-94; Pollution Prevention Program; Each installation is to develop a pollution prevention management plan that addresses ozone depleting chemicals; EPA 17 industrial toxics; hazardous and solid wastes; obtaining environmentally friendly products; energy conservation, and air and water.

Air Force Policy Directive 40-2; 8-Apr-93; Radioactive Materials; Establishes policy for control of radioactive materials, including those regulated by the US Nuclear Regulatory Commission (NRC), but excluding those used in nuclear weapons.

Cultural Resources

10 USC 2701 note, Public Law 103-139; 1997; Legacy Resource Management Program (LRMP); Provides funding to conduct inventories of all scientifically significant biological assets of Eglin AFB.

16 USC 431 et seq.; PL 59-209; 34 Stat. 225; 43 CFR 3; 1906; Antiquities Act of 1906; Provides protection for archeological resources by protecting all historic and prehistoric sites on Federal lands. Prohibits excavation or destruction of such antiquities without the permission (Antiquities Permit) of the Secretary of the department that has the jurisdiction over those lands.

16 USC 461 to 467; 1997; Historic Sites, Buildings and Antiquities Act (HAS); Establishes national policy to preserve for public use historic sites, buildings and objects of national significance: the Secretary of the Interior operates through the National Park Service to implement this national policy.

16 USC 469 to 469c-1; 1997; Archaeological and Historic Preservation Act of 1974 (AHPA); Directs Federal agencies to give notice to the Sec. of the Interior before starting construction of a dam or other project that will alter the terrain and destroy scientific, historical or archeological data, so that the Sec. may undertake preservation.

16 USC 470aa-470mm, Public Law 96-95; 1997; Archaeological Resources Protection Act of 1979 (ARPA); Establishes permit requirements for archaeological investigations and ensures protection and preservation of archaeological sites on federal property.

16 USC 470 to 470w-6-16 USC 470f, 470h-2; 1997; National Historic Preservation Act (NHPA); Requires Federal agencies to (1) allow the Advisory Council on Historic Preservation to comment before taking action on properties eligible for the National Register and (2) preserve such properties in accordance with statutory and regulatory provisions.

25 USC 3001 - 3013), (Public Law 101-601; 1997; Native American Graves Protection and Repatriation Act of 1990 (NAGPRA); Federal agencies must obtain a permit under the Archeological Resources Protection Act before excavating Native American artifacts. Federal agencies must inventory and preserve such artifacts found on land within their stewardship.

42 USC 1996; American Indian Religious Freedom Act (AIRFA); Federal agencies should do what they can to ensure that American Indians have access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites in the practice of their traditional religions.

32 CFR Part 200; Protection of Archaeological Resources: Uniform Regulations; Provides that no person may excavate or remove any archaeological resource located on public lands or Indian lands unless such activity is conducted pursuant to a permit issued under this Part or is exempted under this Part.

36 CFR Part 60; Nominations to National Register of Historic Places; Details how the Federal agency Preservation Officer is to nominate properties to the Advisory Council for consideration to be included on the National Register.

36 CFR Part 800; Protection of Historic and Cultural Properties; Sets out the Section 106 process for complying with Sections 106 and 110 of the NHPA: the Agency official, in consultation with the State Historic Preservation Officer (SHPO), identifies and evaluates affected historic properties for the Advisory Council.

Executive Order 11593, 16 USC 470; 13-May-71; Protection and Enhancement of the Cultural Environment; Instructs federal agencies to identify and nominate historic properties to the National Register, as well as avoid damage to Historic properties eligible for National Register.

Executive Order 13007; 24-May-96; Directs federal agencies to provide access to and ceremonial use of sacred Indian sites by Indian religious practitioners as well as promote the physical integrity of sacred sites.

DoD Directive 4710.1; Archaeological and Historic Resources Management (AHRM); Establishes policy requirements for archaeological and cultural resource protection and management for all military lands and reservations.

Air Force Policy Directive 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements National Historic Preservation Act, Executive Order 11593, and DoD Directive 470.1.

Air Force Instruction 32-7065; 13-Jun-94; Cultural Resource Management; Directs AF bases to prepare cultural resources management plans (CRMP) to comply with historic preservation requirements, Native American considerations; and archeological resource protection requirements, as part of the Base Comprehensive Plan.

Air Force Policy Letter; 4-Jan-82; Establishes Air Force policy to comply with historic preservation and other federal environmental laws and directives.

APPENDIX D

BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES

ECOLOGICAL ASSOCIATIONS

Three broad matrix ecosystems exist on the interstitial areas of Eglin AFB: Sandhills, Flatwoods, and Wetlands/Riparian. The ecosystems are defined by floral, faunal, and geophysical similarities. Artificially maintained open grasslands/shrublands and urban/landscaped areas also exist on Eglin, primarily on test areas or Main Base. Although grasslands/shrublands and urban/landscaped areas are not true ecological associations, they are included in this section as land uses.

Sandhills Matrix

This system is the most extensive natural community type on the Eglin Range, accounting for approximately 78 percent or 362,000 acres of the base. Longleaf Pine Sandhills are characterized by an open, savanna-like structure with a moderate-to-tall canopy of longleaf pine, a sparse midstory of oaks and other hardwoods, and a diverse groundcover comprised mainly of grasses, forbs, and low-stature shrubs. Its structure and composition are maintained by frequent fires (every 3 to 5 years), which control hardwood, sand pine, and titi encroachment. Longleaf Pine Sandhills consist of a high diversity of species adapted to fire and the heterogeneous conditions that fires create. The dominant native grass species in Eglin sandhills is either wiregrass or bluestem, depending on location. Sandhills are often associated with and grade into scrub, upland pine forest, xeric hammock, or slope forests. This matrix is also known as longleaf pine-turkey oak, longleaf pine-xerophytic oak, longleaf pine-deciduous oak, or high pine (U.S. Air Force, 2007).

The functional significance of the Sandhills Matrix is to provide maintenance of regional biodiversity. As little as 5,000 acres of old growth longleaf pine forest remains globally, and Eglin's Sandhills contain more than any other forest in the world. The Eglin Range represents the largest and least-fragmented longleaf pine ownership in the world, and has the best remaining stand of old-growth longleaf pine (U.S. Air Force, 2007).

Flatwoods Matrix

Pine flatwoods occur on flat, moderately well-drained sandy soils with varying levels of organic matter, often underlaid by a hard pan. While the canopy consists of slash pine and longleaf pine, the understory varies greatly from shrubby to an open diverse understory of grasses and herbs. The primary environmental factors controlling vegetation type are soil moisture (soil type and depth to groundwater) and fire history. The average fire frequency in flatwoods is one to eight years, with nearly all of the plants and animals inhabiting this community adapted to recurrent fires. Home to numerous rare and endangered plants and animals, the Flatwoods Matrix plays a significant role in maintaining regional biodiversity. Eglin's more than 300 acres of old growth flatwoods are among the last remaining of such high quality (U.S. Air Force, 2007).

Wetlands/Riparian Matrix

Wetlands are extraordinarily important contributors to the health and diversity of the Eglin landscape. Riparian areas are generally found along a water feature, such as a river, stream, or creek. Great diversity of invertebrate and fish species is found within the streams associated

with these watersheds. At least 11 different plant community types are found within riparian areas of the Eglin Range. Streams are perennial, originating in the sandy uplands of the installation and fed by groundwater recharge. Flood events only occur during extreme rain events (e.g., hurricanes); otherwise, flows are relatively consistent. Temperatures fluctuate during the year and each day, being more constant near the headwaters. These seepage streams are moderately acidic. The specific types of wetland matrices found on or adjacent to the Eglin Range are depression wetlands, seepage slopes, and floodplain wetlands (U.S. Air Force, 2007).

Other Land Uses

Open Grasslands/Shrublands - Open Grasslands/Shrublands occur in areas of heavily disturbed Sandhills, Flatwoods, and Wetlands/Riparian ecological sites. This habitat predominantly occurs within the test areas on Eglin AFB. Grasses and low shrubs characterize open Grassland/Shrubland areas. Eglin maintains this habitat with machinery or fire that removes or prevents future growth (U.S. Air Force, 2007).

Urban/Landscaped Areas - Eglin AFB currently has approximately 46,000 acres of semi-improved areas and 14,000 acres of improved areas. Bahia grass (*Panicum notatum*) is the primary turf grass that is used in the semi-improved areas, while St. Augustine grass (*Stenotaphrum secundatum*) and Centipede grass (*Eremochloa ophiuroides*) are the primary turf grasses used in the improved areas. Ground maintenance encourages low-maintenance landscaping and uses native plants whenever possible (U.S. Air Force, 2007).

Flora and Fauna of Ecological Associations

Table D-1 provides a summary of some of the plant and animal species commonly found within the ecological associations described above. The list is not a comprehensive inventory of the species found within these ecological associations; the table provides a reference summary.

SENSITIVE HABITATS

High Quality Natural Communities

Eglin's contribution to southeastern conservation is evident in its extraordinary biodiversity and the exemplary quality of its many remnant natural communities. While the greater part of the installation is globally significant due to its biodiversity, specific areas have been designated "High Quality Natural Communities" due to their exceptional high quality or the presence of rare species. These areas were identified by the FNAI through a project funded by the Department of Defense (DoD) Legacy Resource Management Program. These areas are distinguished by the uniqueness of the community, ecological condition, species diversity, and/or presence of rare species. These high quality areas, totaling 75,266 acres and covering approximately 16 percent of the installation, are tangible examples of the successful restoration actions of Jackson Guard and the compatibility of these communities with most mission activities (U.S. Air Force, 2007).

Table D-1. Typical Plant and Animal Species of Eglin AFB by Ecological Association

| Plants | | Animals | |
|--|--------------------------------|-------------------------|------------------------------------|
| Common Name | Scientific Name | Common Name | Scientific Name |
| Sandhills Ecological Association | | | |
| Longleaf Pine | <i>Pinus palustris</i> | Red-cockaded Woodpecker | <i>Picoides borealis</i> |
| Turkey Oak | <i>Quercus laevis</i> | Bobwhite Quail | <i>Colinus virginianus</i> |
| Blackjack Oak | <i>Q. marilandica</i> | Great Horned Owl | <i>Bubo virginianus</i> |
| Bluejack Oak | <i>Q. incana</i> | Gopher Tortoise | <i>Gopherus polyphemus</i> |
| Wiregrass | <i>Aristida stricta</i> | Six-lined Racerunner | <i>Cnemidophorus sexlineatus</i> |
| Saw Palmetto | <i>Serona repens</i> | Diamondback Rattlesnake | <i>Crotalus adamanteus</i> |
| Bracken Fern | <i>Pteridium aquilinum</i> | Raccoon | <i>Procyon lotor</i> |
| Blueberry | <i>Vaccinium</i> spp. | Florida Black Bear | <i>Ursus americanus floridanus</i> |
| Yaupon | <i>Ilex vomitoria</i> | Fox Squirrel | <i>Sciurus niger</i> |
| Gallberry | <i>Ilex glabra</i> | Least Shrew | <i>Cryptotis parva</i> |
| Gopher Apple | <i>Licania michauxii</i> | Cottontail Rabbit | <i>Sylvilagus floridanus</i> |
| Sand Blackberry | <i>Rubus cuneifolius</i> | Pocket Gopher | <i>Geomys pinetis</i> |
| Pine-woods Bluestem | <i>Andropogon arctatus</i> | White-tailed Deer | <i>Castor canadensis</i> |
| Flatwoods Ecological Association | | | |
| Longleaf Pine | <i>Pinus palustris</i> | Wood Duck | <i>Aix sponsa</i> |
| Runner Oak | <i>Quercus pumila</i> | Red-winged Blackbird | <i>Agelaius phoeniceus</i> |
| Saw Palmetto | <i>Serona repens</i> | Cottonmouth | <i>Agkistrodon piscivorus</i> |
| Coastal Plain St. Johnswort | <i>Hypericum brachyphyllum</i> | Florida Black Bear | <i>Ursus americanus floridanus</i> |
| Slash Pine | <i>Pinus elliottii</i> | River Otter | <i>Lutra canadensis</i> |
| Black Titi | <i>Cliftonia monophylla</i> | Beaver | <i>Castor canadensis</i> |
| Pitcher Plant | <i>Sarracenia</i> spp. | Gray Fox | <i>Urocyon cinereoargenteus</i> |
| Wetland and Riparian Ecological Association | | | |
| Cattail | <i>Typha domingensis</i> | Florida Black Bear | <i>Ursus americanus floridanus</i> |
| Phragmites | <i>Phragmites australis</i> | American Alligator | <i>Alligator mississippiensis</i> |
| White Cedar | <i>Chamaecyparis thyoides</i> | Pine Barrens Tree Frog | <i>Hyla andersonii</i> |
| Swamp Tupelo | <i>Nyssa biflora</i> | Five-lined Skink | <i>Eumeces fasciatus</i> |
| Purple Pitcher Plant | <i>Sarracenia purpurea</i> | Green Anole | <i>Anolis carolinensis</i> |
| Swamp Titi | <i>Cyrilla racemiflora</i> | Garter Snake | <i>Thamnophis sirtalis</i> |
| Tulip Poplar | <i>Liriodendron tulipifera</i> | Raccoon | <i>Procyon lotor</i> |
| Sweetbay Magnolia | <i>Magnolia virginiana</i> | American Beaver | <i>Castor canadensis</i> |
| Redbay | <i>Persea borbonia</i> | Little Blue Heron | <i>Egretta caerulea</i> |

Outstanding Natural Areas

From the High Quality Natural Communities FNAI identified, 17 larger-scale landscapes containing complexes of these high quality areas and locations of rare species were named Outstanding Natural Areas, and are listed below (U.S. Air Force, 2007):

- 1) TA A-77 Outstanding Natural Area
- 2) Alaqua-Blount Creek Confluence
- 3) Alice Creek
- 4) Boiling Creek/Little Boiling Creek
- 5) Brier Creek
- 6) East Bay Flatwoods and Scrub Mosaic
- 7) Live Oak Creek
- 8) Lower Weaver River
- 9) Patterson Outstanding Natural Area and Extension
- 10) Piney Creek
- 11) Prairie Creek
- 12) Santa Rosa Island
- 13) Scrub Pond
- 14) Spencer Flats Wetlands
- 15) White Point
- 16) Whitmier Island
- 17) Yellow River Basin

Significant Botanical Sites

FNAI also identified 15 Significant Botanical Sites that support rare plants on Eglin; they are listed below:

- 1) East Bay Savannahs
- 2) Patterson Natural Area Expansion
- 3) Santa Rosa Island
- 4) Blue Spring Creek Lakes
- 5) Malone Creek
- 6) Titi Creek Wilderness Area
- 7) Live Oak Creek
- 8) Turkey Gobbler Creek Cypress Swamp
- 9) Turkey Hen Creek Swamp
- 10) Boiling Creek and Little Boiling Creek
- 11) Hick's Creek Prairie

- 12) Whitmier Island
- 13) Brier Creek
- 14) Hickory Branch Hardwood Forest
- 15) Piney Creek

Large portions of the Outstanding Natural Areas and the Significant Botanical Sites overlap. Combined, both of these areas total 43,210 acres, or approximately 9 percent of the Installation (U.S. Air Force, 2007).

SENSITIVE SPECIES

Table D-2 shows all of the Florida Natural Areas Inventory (FNAI)-tracked and state- and federally listed species present on or adjacent to Eglin Air Force Base (AFB). Most of these species are found within the interstitial areas of Eglin AFB. Descriptions for species of particular concern at Eglin AFB are provided below. Additional information on the other species listed in Table D-2 is available in the *Eglin Military Complex Environmental Baseline Study Resource Appendices Volume 1--Eglin Land Test and Training Range* (U.S. Air Force, 2003).

Table D-2. State-listed, Federally Listed, and FNAI-tracked Species, Eglin AFB

| Scientific Name | Common Name | Status | |
|---------------------------------------|----------------------------------|--------|---------------|
| | | State | Federal |
| Fish | | | |
| <i>Acipenser oxyrinchus desotoi</i> | Gulf Sturgeon | LS | LT |
| <i>Awaous banana</i> | River Goby | - | - |
| <i>Etheostoma okaloosae</i> | Okaloosa darter | LE | LE |
| <i>Pteronotropis welaka</i> | Bluenose Shiner | LS | - |
| Amphibians and Reptiles | | | |
| <i>Alligator mississippiensis</i> | American Alligator | LS | T (S/A) |
| <i>Ambystoma bishopi</i> | Reticulated Flatwoods Salamander | LS | LE (proposed) |
| <i>Amphiuma pholeter</i> | One-toed Amphiuma | - | - |
| <i>Caretta caretta</i> | Atlantic Loggerhead Turtle | LT | LT |
| <i>Chelonia mydas</i> | Atlantic Green Turtle | LE | LE |
| <i>Crotalus adamanteus</i> | Eastern Diamondback Rattlesnake | - | - |
| <i>Dermochelys coriacea</i> | Leatherback Turtle | LE | LE |
| <i>Drymarchon corais couperi</i> | Eastern Indigo Snake | LT | LT |
| <i>Eumeces anthracinus</i> | Coal Skink | - | - |
| <i>Gopherus polyphemus</i> | Gopher Tortoise | LT | - |
| <i>Graptemys ernsti</i> | Escambia Map Turtle | - | - |
| <i>Hemidactylum scutatum</i> | Four-Toed Salamander | - | - |
| <i>Heterodon simus</i> | Southern Hognose Snake | - | - |
| <i>Hyla andersonii</i> | Pine Barrens Treefrog | LS | - |
| <i>Macroclemys temmincki</i> | Alligator Snapping Turtle | LS | - |
| <i>Pituophis melanoleucus mugitus</i> | Florida Pine Snake | LS | - |
| <i>Rana capito</i> | Gopher Frog | LS | - |
| <i>Rana okaloosae</i> | Florida Bog Frog | LS | - |

Table D-2. State-listed, Federally Listed, and FNAI-tracked Species, Eglin AFB, Cont'd

| Scientific Name | Common Name | Status | |
|--|-------------------------------|--------|---------|
| | | State | Federal |
| Birds | | | |
| <i>Accipiter cooperii</i> | Cooper's Hawk | - | - |
| <i>Aimphila aestivalis</i> | Bachman's Sparrow | - | - |
| <i>Ardea alba</i> | Great Egret | - | - |
| <i>Athene cunicularia floridana</i> | Florida Burrowing Owl | LS | - |
| <i>Charadrius alexandrinus</i> | Snowy Plover | LT | - |
| <i>Charadrius melanotos</i> | Piping Plover | LT | LT |
| <i>Charadrius wilsonia</i> | Wilson's Plover | - | - |
| <i>Egretta caerulea</i> | Little Blue Heron | LS | - |
| <i>Egretta thula</i> | Snowy Egret | LS | - |
| <i>Elanoides forficatus</i> | Swallow-tailed Kite | - | - |
| <i>Eudocimus albus</i> | White Ibis | LS | - |
| <i>Falco sparverius paulus</i> | Southeastern American Kestrel | LT | - |
| <i>Haematopus palliatus</i> | American Oystercatcher | LS | - |
| <i>Haliaeetus leucocephalus</i> | Bald Eagle | LT | - |
| <i>Pelecanus occidentalis</i> | Brown Pelican | LS | - |
| <i>Picoides borealis</i> | Red-cockaded Woodpecker | LS | LE |
| <i>Picoides villosus</i> | Hairy Woodpecker | - | - |
| <i>Rynchops niger</i> | Black Skimmer | LS | - |
| <i>Sterna antillarum</i> | Least Tern | LT | - |
| <i>Sterna caspia</i> | Caspian Tern | - | - |
| <i>Sterna maxima</i> | Royal Tern | - | - |
| <i>Sterna sandvicensis</i> | Sandwich Tern | - | - |
| Mammals | | | |
| <i>Peromyscus polionotus leucocephalus</i> | Santa Rosa Beach Mouse | - | - |
| <i>Trichechus manatus</i> | Manatee | LE | LE |
| <i>Ursus americanus floridanus</i> | Florida Black Bear | LT** | - |
| Invertebrates | | | |
| <i>Lampsilis australis</i> | Southern Sandshell | - | C |
| <i>Pleurobema strodeanum</i> | Fuzzy Pigtoe | - | C |
| <i>Ptychobranchus jonesi</i> | Southern Kidneyshell | - | C |
| <i>Villosa choctawensis</i> | Choctaw Bean | - | C |
| Plants | | | |
| <i>Andropogon arctatus</i> | Pine-Woods Bluestem | LT | - |
| <i>Asclepias viridula</i> | Southern Milkweed | LT | - |
| <i>Baptisia calycosa var villosa</i> | Pineland Wild Indigo | LT | - |
| <i>Calamintha dentata</i> | Toothed Savory | LT | - |
| <i>Calamovilfa curtissii</i> | Curtiss' Sand Grass | LT | - |
| <i>Calycanthus floridus var floridus</i> | Sweet Shrub | LE | - |
| <i>Carex baltzelli</i> | Baltzell's Sedge | LT | - |
| <i>Carex tenax</i> | Sandhill Sedge | - | - |
| <i>Chrysopsis godfreyi</i> | Godfrey's Golden Aster | LE | - |
| <i>Chrysopsis gossypina ssp cruiseana</i> | Cruise's Golden Aster | LE | - |
| <i>Cladium mariscoides</i> | Pond Rush | - | - |
| <i>Coelorachis tuberculosa</i> | Piedmont Jointgrass | LT | - |
| <i>Drosera intermedia</i> | Spoon-Leaved Sundew | LT | - |
| <i>Eleocharis rostellata</i> | Beaked Spikerush | LE | - |
| <i>Epigaea repens</i> | Trailing Arbutus | LE | - |

Table D-2. State-listed, Federally Listed, and FNAI-tracked Species, Eglin AFB, Cont'd

| Scientific Name | Common Name | Status | |
|--|-----------------------------------|--------|---------|
| | | State | Federal |
| <i>Hexastylis arifolia</i> | Heartleaf | LT | - |
| <i>Hymenocallis henryae</i> | Henry's Spider Lily | LE | - |
| <i>Ilex amelanchier</i> | Serviceberry Holly | LT | - |
| <i>Juncus gymnocarpus</i> | Coville's Rush | LE | - |
| <i>Kalmia latifolia</i> | Mountain Laurel | LT | - |
| <i>Lachnocaulon digynum</i> | Bogbuttons | LT | - |
| <i>Lilium catesbaei</i> | Pine Lily | LT | - |
| <i>Lilium iridollae</i> | Panhandle Lily | LE | - |
| <i>Lilium michauxii</i> | Carolina Lily | LE | - |
| <i>Lindera subcoriacea</i> | Bog Spice Bush | LE | - |
| <i>Linum westii</i> | West's Flax | LE | - |
| <i>Litsea aestivalis</i> | Pondspice | LE | - |
| <i>Lupinus westianus</i> | Gulfcoast Lupine | LT | - |
| <i>Macranthera flammea</i> | Hummingbird Flower | LE | - |
| <i>Magnolia ashei</i> | Ashe's Magnolia | LE | - |
| <i>Magnolia pyramidata</i> | Pyramidal Magnolia | LE | - |
| <i>Malaxis unifolia</i> | Green Adder's-Mouth | LE | - |
| <i>Matela alabamensis</i> | Alabama Spiney Pod | LE | - |
| <i>Medeola virginiana</i> | Indian Cucumber-Root | LE | - |
| <i>Monotropa hypopithys</i> | Pine Sap | LE | - |
| <i>Myriophyllum laxum</i> | Piedmont Water-Milfoil | - | - |
| <i>Nuphar luteum</i> ssp <i>ulvaceum</i> | West Florida Cow Lily | - | - |
| <i>Panicum nudicaule</i> | Naked-Stemmed Panic Grass | LT | - |
| <i>Pinguicula lutea</i> | Yellow Butterwort | LT | - |
| <i>Pinguicula planifolia</i> | Swamp Butterwort | LT | - |
| <i>Pinguicula primuliflora</i> | Primrose-Flowered Butterwort | LE | - |
| <i>Platanthera integra</i> | Southern Yellow Fringeless Orchid | LE | - |
| <i>Polygonella macrophylla</i> | Large-Leaved Jointweed | LT | - |
| <i>Quercus arkansana</i> | Arkansas Oak | LT | - |
| <i>Rhexia parviflora</i> | Small-Flowered Meadow Beauty | LE | - |
| <i>Rhexia salicifolia</i> | Panhandle Meadowbeauty | LT | - |
| <i>Rhododendron austrinum</i> | Orange Azalea | LE | - |
| <i>Rhynchospora crinipes</i> | Hairy-Peduncled Beakrush | LE | - |
| <i>Rhynchospora stenophylla</i> | Narrow-Leaved Beakrush | LT | - |
| <i>Sarracenia leucophylla</i> | White-Top Pitcherplant | LE | - |
| <i>Sarracenia rubra</i> | Sweet Pitcherplant | LT | - |
| <i>Sideroxylon thornei</i> | Thorne's Buckthorn | LE | - |
| <i>Stewartia malacodendron</i> | Silky Camellia | LE | - |
| <i>Tephrosia mohrii</i> | Pineland Hoary Pea | LT | - |
| <i>Xanthorhiza simplicissima</i> | Yellow-Root | LE | - |
| <i>Xyris longisepala</i> | Karst Pond Yellow-Eyed Grass | LE | - |
| <i>Xyris scabrifolia</i> | Harper's Yellow-Eyed Grass | LT | - |
| <i>Zigadenus leimanthoides</i> | Coastal Death Camas | LE | - |
| Lichens | | | |
| <i>Cladonia perforata</i> | Florida Perforate Cladonia | LE | LE |

LE = Endangered: species in danger of extinction throughout all or a significant portion of its range

LT = Threatened: species likely to become endangered within the foreseeable future throughout all or a significant portion of its range

Table D-2. State-listed, Federally Listed, and FNAI-tracked Species, Eglin AFB, Cont'd

LS = Species of Special Concern: a species, subspecies, or isolated population that is facing a moderate risk of extinction in the future

C = Candidate: species that will soon be listed as threatened or endangered

T(S/A) = Similarity of Appearance (Threatened). Threatened due to similarity of appearance to a species that is federally listed such that enforcement personnel have difficulty differentiating between the listed and unlisted species

- = Not currently listed, but tracked by FNAI due to rarity

* = Flatwoods salamander is undergoing final rule to have the species on Eglin re-designated as *Ambystoma bishopi*. This species will be listed as federally endangered.

** = State listed as LT but not applicable in Baker and Columbia Counties or the Apalachicola National Forest

FEDERALLY LISTED SPECIES

Reticulated Flatwoods Salamander

The reticulated flatwoods salamander is proposed for listing as federally endangered and is a state species of special concern. Based on molecular and morphological analyses, Pauly et al. (2007) proposed the separation of the flatwoods salamander into two species. The division lies along the Apalachicola and Flint Rivers with reticulated flatwoods salamanders (*Ambystoma bishopi*) inhabiting areas to the west and frosted flatwoods salamanders (*A. cingulatum*) ranging to the east of the rivers. Optimal habitat for this small mole salamander is open, mesic (moderately wet) woodlands of longleaf or slash pine flatwoods maintained by frequent fires and that contain shallow, ephemeral wetland ponds. Males and females migrate to these ephemeral ponds during the cool, rainy months of October through December. The females lay their eggs in vegetation at the edges of the ponds. Flatwoods salamanders may disperse long distances from breeding sites to upland sites where they live as adults (U.S. Air Force, 2006).

There are 18 known breeding ponds for the flatwoods salamander on the Eglin Range. Additionally, the Eglin Range supports approximately 17,000 acres of potential salamander habitat in mesic flatwoods. There is potential for critical habitat to be designated on Eglin AFB.

The primary threat to the flatwoods salamander is loss of mesic habitat through the filling in of wetlands and other alterations to the landscape hydrology. Flatwoods salamander habitat is also threatened by the introduction of invasive, non-native species (INS). Flatwoods salamanders and their active breeding wetlands both appear to have declined in number since the original Eglin surveys in 1993 and 1994. This is possibly due in part to several years of drought in the late 1990s and early 2000s. Breeding wetlands may not have remained wet long enough for larvae to complete metamorphosis if rainfall amounts were not sufficient. This has resulted in little population recruitment over the last decade at Eglin's wetlands (U.S. Air Force, 2006).

The USFWS guidelines in the *Federal Register*, dated 01 April 1999, establish a 450-meter (1,476-foot) buffer area from the wetland edge of confirmed breeding ponds. Within the buffer area, the guidelines restrict ground-disturbing activities in order to minimize the potential for direct impacts to salamanders, the introduction and spread of invasive non-native plant species, and alterations to hydrology and water quality.

Okaloosa Darter

The Okaloosa darter (*Etheostoma okaloosae*) is a small federally and state-listed endangered fish. Spawning occurs from March to October, with the greatest amount of activity taking place during April (USFWS, 1998). The entire global population of this species is found in the tributaries and main channels of Toms, Turkey, Mill, Swift, East Turkey, and Rocky Creeks, which drain into two bayous of Choctawhatchee Bay. These seepage streams have persistent discharge of clear, sand-filtered water through sandy channels, woody debris, and vegetation beds. The Eglin Range contains 90 percent of the 457-square kilometer (176 square mile) drainage area. The remaining portions of the watershed are within the urban areas of Niceville and Valparaiso (U.S. Air Force, 2006).

The most immediate threat to the Okaloosa darter is loss of habitat through degradation of stream water quality from soil erosion into streams. The sources with high soil and sediment erosion probability are borrow pits, clay roads that cross streams, and a few test area sites where vegetation is maintained by using choppers on slopes. A 1992 study identified erosion from borrow pits and roads as major contributors to the degradation of darter habitat. Mission activities could avoid further degradation of stream quality by keeping vehicle activity and troop movement confined to rails, bridges, and roads, and conducting ground-disturbing activities only outside of a 300-foot buffer around Okaloosa darter streams. These procedures are available to minimize sediment erosion into the darter watersheds and to avoid a consultation process under Endangered Species Act (ESA) regulations (U.S. Air Force, 2006).

Due to a recovery plan that Eglin AFB implemented for the Okaloosa darter in 1998, the darter is currently under federal status review for potential down-listing from endangered to threatened in 2007. To ensure down-listing of the Okaloosa darter, Eglin AFB is protecting in-stream flows and historical habitat through management plans, conservation agreements, easements, and/or acquisitions; is implementing an effective habitat restoration program to control erosion from roads, clay pits, and open ranges; is demonstrating that the Okaloosa darter population is stable or increasing and that the range of the Okaloosa darter has not decreased at all historical monitoring sites; and is seeing that no foreseeable threats exist that would impact the survival of the species. The Eglin Natural Resources Section (NRS) is about 95 percent complete with erosion control projects in darter watersheds and will soon be entering the maintenance phase (U.S. Air Force, 2006).

Gulf Sturgeon

The Gulf sturgeon (*Acipenser oxyrinchus desotoi*) is a federally listed threatened species and a state-listed species of special concern. This large fish occurs predominately in the northeastern Gulf of Mexico, feeding in offshore areas and inland bays during the winter months and moving into freshwater rivers during the spring to spawn. Migration into fresh water generally occurs from March to May, while migration into salt water occurs from October through November (U.S. Air Force, 2006).

The USFWS designated Gulf sturgeon critical habitat in 2003 in multiple Gulf of Mexico rivers, bays, and the Gulf itself. Federally designated critical habitat is defined as specific areas that contain physical or biological features essential to the species' conservation and that may require special management considerations or protection. As it pertains to the Eglin Range, Choctawhatchee Bay (including the main body of Choctawhatchee Bay, Hogtown Bayou, Jolly Bay, Bunker Cove, and Grassy Cove; and excluding all other bayous, creeks, and rivers at their mouths/entrances), Santa Rosa Sound, Yellow River, Shoal River, Blackwater Bay, East Bay, and the Gulf of Mexico out to 1 nautical mile offshore of Santa Rosa Island have been designated as critical habitat. The lower rivers provide summer resting and migration habitat, and the bays, sound, and Gulf contain winter feeding and migration habitat (U.S. Air Force, 2006).

The major mission-related issues for Gulf sturgeon in freshwater and estuarine areas are erosion from test areas and Range roads and potential impacts to river and bay bottoms and banks from boats and amphibious vehicles (U.S. Air Force, 2006). The USFWS guidance for habitat preservation is to utilize established landings on the Yellow River for watercraft; and avoid scarring of river bottoms and damage to seagrass beds (U.S. Air Force, no date).

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) is listed as a federal and state threatened species that is the largest nonvenomous snake in North America. The primary reason for its listing is population decline resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats exposes the snake to danger from increased contact with humans. eastern indigo snakes frequently utilize gopher tortoise burrows and the burrows of others species for over-wintering. The snake frequents flatwoods, hammocks, stream bottoms, riparian thickets, and high ground with well-drained, sandy soils. The eastern indigo snake could occur anywhere on the Eglin Range because it uses such a wide variety of habitats (U.S. Air Force, 2006).

The species is extremely uncommon on the Eglin Range, with the sighting of only 29 eastern indigo snakes throughout the Eglin Range from 1956 to 1999, and no sightings reported since 1999 (Gault, 2006). Most of these snakes were seen crossing roads or after being killed by vehicles. It is difficult to determine a precise number or even estimate of the number of these snakes due to the secretive nature of this species (U.S. Air Force, 2006).

Red-Cockaded Woodpecker

The red-cockaded woodpecker (RCW) (*Picoides borealis*) is listed as a federally endangered bird species and a state species of special concern. The RCW excavates cavities in live longleaf pine trees that are at least 85 years old. The RCW historically had a habitat range as far north as New Jersey and as far west as Oklahoma. Today, the RCW has been restricted to the southeastern United States, from Florida to Virginia and to southeast Texas, due to a loss of habitat. In the southeast, 98 percent of the longleaf pine forests have been removed, making relatively undeveloped federal lands such as Eglin AFB primary habitat for the species. Due to

the preservation of continuous longleaf pine forests on Eglin, the Eglin Range has one of the largest remaining populations of RCWs in the country. In 2003, the USFWS identified Eglin AFB as one of 13 primary core populations for the RCW (U.S. Air Force, 2006). Eglin's population goal is 350 potential breeding groups (PBGs). The Eglin population has been increasing since 1994, and the current population has 366 active clusters (Figure D-1) and an estimated 317 PBGs.

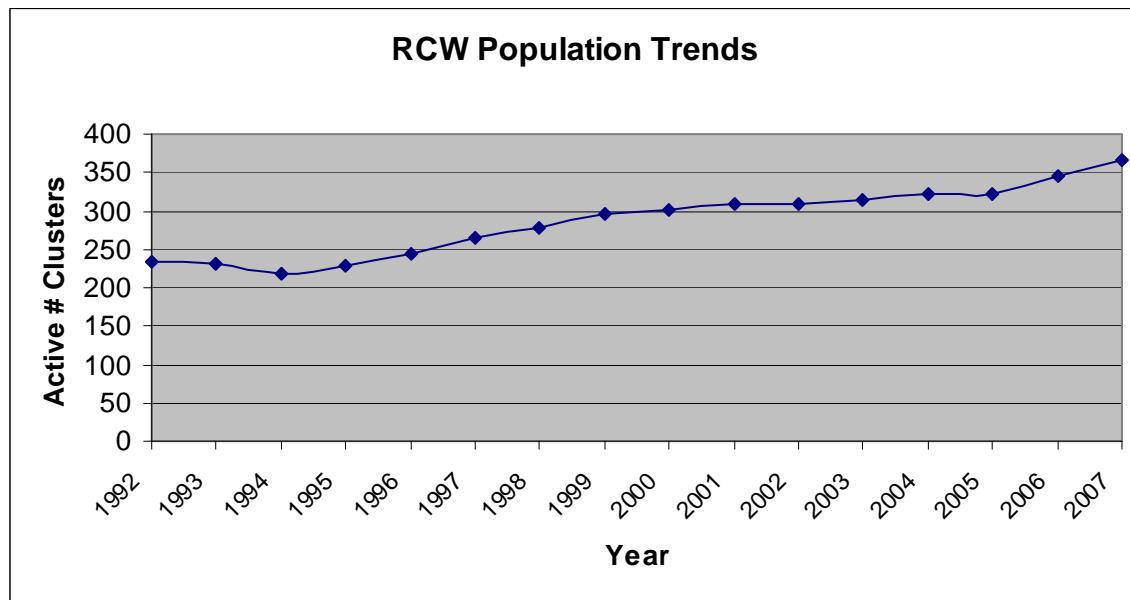


Figure D-1. RCW Population Trends from 1992 through 2007

The removal of longleaf pine trees, degradation of quality habitat, and noise generated from mission-related or other activities are potential threats to the RCW on the Eglin Range. Eglin is executing a USFWS-approved management strategy to meet certain growth objectives of the RCW and to obtain increased mission flexibility with the federal requirements for RCW impacts (U.S. Air Force, 2006).

The Eglin NRS GIS database includes the locations of active RCW cavity trees (trees containing one or more cavities that are utilized by the RCW) and inactive RCW cavity trees (trees containing cavities that were once utilized by the RCW but have not shown recent activity). Inactive RCW cavities, which are defined as those cavities that were once utilized by the RCW but have not shown recent activity, are spatially recorded. RCW foraging habitat around active clusters of RCW cavities are also mapped in the GIS. Consultation guidelines require that transient foot and vehicle traffic lasting more than 2 hours be avoided within 200 feet of active RCW trees. Also, within this 200-foot buffer, traffic must stay on established trails and roads, and digging, excavating, and bivouacking are prohibited. In addition, if timber is to be removed within 0.5 miles of active cavity trees, then a forage habitat analysis must be completed to determine potential impacts. Consultation will be required if resulting resources fall below USFWS guidelines.

Freshwater Mussels

The southern sandshell (*Lampsilis australis*), fuzzy pigtoe (*Pleurobema strodeanum*), southern kidneyshell (*Ptychobranchus jonesi*), and Choctaw bean (*Villosa choctawensis*) are federal candidates for listing as threatened or endangered species. These freshwater mussels are found only in the Yellow, Escambia, and Choctawhatchee river drainages in Florida and Alabama. From the 1990s to 2004, surveys have documented declines in the number of these candidate mussel species (Blalock-Herod et al., 2002; Pilarczyk et al., 2006). Furthermore, these surveys have been unable to capture many of these mussel species at sites where they were known to occur. These local extirpations and reductions in numbers are attributed to habitat alteration from various sources.

The greatest threat to these freshwater mussels is runoff associated with poor land use practices, such as poorly conducted agricultural or silvicultural practices, construction, and mining activities. Because of their limited motility, mussels are extremely vulnerable to acute, localized impacts (i.e., impoundment, runoff from adjacent unvegetated land). Mussels filter fine particulate organic matter from the water, so excess sedimentation may interfere with feeding. Sedimentation may also cause direct mortality by deposition and suffocation, and turbidity may reduce or eliminate juvenile recruitment. Pesticides and other water quality issues also threaten the health of these filter feeders. Preferred habitats are creeks and rivers with slow to moderate currents and sandy substrates.

STATE-LISTED AND RARE SPECIES

Eglin AFB provides habitat for many state-listed and rare species in addition to the federally listed species described in the previous sections. Air Force Instruction (AFI) 32-7064 calls for the protection and conservation of state-listed species when not in direct conflict with the military mission. The conservation of state-listed species and other rare but unlisted species is encouraged and in some cases is critical to ensuring continued mission flexibility. Management actions conducted by Eglin for many of the federally listed species provide direct and indirect benefits to many state-listed and rare species. There are 67 state-listed threatened and endangered species found on Eglin. Most (55) of the 67 state-listed species are plants. An additional 17 animal species are not listed by the FWC or the USFWS, but are tracked by the FNAI due to their rarity and/or declining population trends. Below are descriptions of some of the state-listed and rare animal species of particular concern at Eglin AFB.

Florida Black Bear

The Florida black bear (*Ursus americanus floridanus*) is currently listed as a state threatened species, except in Baker and Columbia Counties and in Apalachicola National Forest. Florida black bear populations are currently found in Florida and Georgia, and there is also a small population in Alabama. Eglin AFB is considered to be the smallest population, with an estimated 60 to 100 individuals; however, Eglin's black bear population has shown signs of increase since the early 1990s. Reasons for population declines include loss of habitat due to urban development and direct mortality due to collisions with vehicles. Black bear in Florida breed in June to July, and young are born in January to February. Most black bears within the

Eglin Range utilize the large swamps and floodplain forests in the southwest and northern portions of the Eglin Range, where they feed on fruits, acorns, beetles, and yellow jackets. Black bear sightings have occurred at numerous locations throughout the Eglin Range, the majority of which have been within the interstitial areas (U.S. Air Force, 2006).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is listed as a state threatened species. Eagles are territorial and exhibit a strong affinity for a nest site once a nest has been established. It is common for a breeding pair to rebuild damaged or lost nests in the same tree or in an adjacent tree. Individual pairs return to the same territory year after year and territories are often inherited by subsequent generations. The nesting period in the southeast United States extends from 01 October to 15 May, with most nests completed by the end of November (U.S. Air Force, 2006). Most eagles migrate north during the hot summer season. Bald eagles nest at one location on Eglin Main Base, between Cobbs Overrun and TA A-22, and on Santa Rosa Island near Test Site A-12. The pair of eagles at the Main Base site has fledged one to two birds per year in most years, but in some years no young were fledged (U.S. Air Force, 2006).

Eglin AFB follows the USFWS *National Bald Eagle Management Guidelines* for the bald eagle in the Southeast Region (USFWS, 2007). The guidelines limit certain types of activities near nests during breeding season. Aircraft activity should not take place within 1,000 feet of the nest during breeding season. If visible from the nest, foot traffic should remain at least 330 feet from the nest. Boat traffic should maintain a buffer of 330 feet when possible, but small motorized boats may pass within 330 feet of the nest if the boats minimize trips and avoid stopping in the area.

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*) is a state threatened species. It also may become a federal “candidate” species in the near future. The tortoise is found primarily within the Sandhills and Open Grassland ecological associations on the Eglin Range, where it excavates a tunnel-like burrow for shelter from climatic extremes and refuge from predators. The primary features of good tortoise habitat are sandy soils, open canopy with plenty of sunlight, and abundant food plants (forbs and grasses). Prescribed fire is often employed to maintain these conditions. Gopher tortoise burrows serve as important habitat for many species, including the federally listed eastern indigo snake (U.S. Air Force, 2006). A Candidate Conservation Agreement (CCA) for the gopher tortoise has been developed as a cooperative effort among state, federal, non-governmental, and private organizations. The purpose of this agreement is to collectively implement proactive gopher tortoise conservation measures across its eastern range. This agreement will be made final by the end of 2008.

Florida Bog Frog

The Florida bog frog (*Rana okaloosae*), a species of special concern by the state, can only be found within Walton, Okaloosa, and Santa Rosa Counties. Most of the habitat for the frog lies on Eglin AFB property, with all known locations of the frog in small tributary streams of the

Yellow, Shoal, and East Bay rivers. There are 65 documented bog frog locations on the Eglin Range, but only 58 of those have been verified.

Southeastern American Kestrel

The southeastern American kestrel (*Falco sparverius paulus*), a state threatened species, is a common permanent resident of Eglin. This small raptor typically preys on small rodents, reptiles, and insects in clearings or woodland edges. The species can be found within the Sandhills and Open Grassland/Shrubland ecological associations, and may occur on or near any of the test areas at Eglin.

Florida Pine Snake

The Florida pine snake (*Pituophis melanoleucus mugitus*), a state species of concern, inhabits dry areas such as the longleaf pine, oak woodlands, and sand pine scrub communities found within the Sandhills ecological association. The species is physically adapted for digging into loosely packed sand. It also enters into rodent burrows and occasionally into gopher tortoise burrows.

Gopher Frog

Gopher frogs (*Rana capito*), a state species of concern, are associated with gopher tortoise habitat, as they use gopher tortoise burrows for cover, but are also known to flourish where the tortoises no longer occur. They also use oldfield mouse burrows, hollow stumps, and other holes for cover. The species requires nearby seasonally flooded grassy ponds, depression marshes, or Sandhills upland lakes that lack fish populations, found within the Sandhills ecological association, for breeding. They have been found in the longleaf pine, turkey oak, pine flatwood, sand pine scrub, and xeric hammock open or forested communities of the Sandhills and Open Grassland/Shrubland ecological associations up to 2 kilometers from the breeding ponds. Eglin supports the largest known concentration of reproductive sites of the gopher frog subspecies anywhere within its range (FNAI, 1993).

Pine Barrens Tree Frog

The pine barrens tree frog (*Hyla andersonii*), a state species of concern, is a small (approximately 1.5-inch) lime-green frog with a maroon/brown stripe on its sides and a white belly. It is typically found in herbaceous and shrubby bogs of the Wetland/Riparian ecological association, near clear, shallow water along the Blackwater and Yellow rivers and Choctawhatchee Bay. Breeding, initiated by a repeating call resembling a nasal “quonk,” occurs between March and September, with tadpoles emerging between May and August. Stream and water quality degradation and hardwood forest encroachment are the main threats to this species (FNAI, 2001).

Migratory Birds

Migratory birds pass through the ROI, but neither Eglin nor Hurlburt is considered an important stopover area or concentration site for neotropical migratory birds in the spring or fall (Tucker et

al., 1996). Breeding neotropical migrants at Eglin and Hurlburt are primarily found in riparian, hammock, and barrier island habitats. These areas can serve as temporary habitat for neotropical birds migrating to and from the Caribbean and South and Central America. Neotropical migrants are more common within the ROI during fall migration than spring migration (Tucker et al., 1996).

INVASIVE NON-NATIVE SPECIES

Invasive non-native species (INS) include plants, animals, insects, diseases, and other organisms that are becoming established and spreading at an alarming rate throughout the world. An invasive species can be defined as a species that is non-native to an ecosystem and whose intentional or accidental introduction causes or is likely to cause environmental or economic damage or harm to human health.

The Eglin AFB INS Management Program focuses on invasive non-native plant and animal species that cause or may cause negative environmental impacts to Eglin ecosystems (U.S. Air Force, 2006). Some of the main invasive non-native species of concern are Chinese tallow, cogon grass, Japanese climbing fern, Chinese privet, torpedo grass, feral pigs, and feral cats. The program's purpose is to protect the integrity of Eglin's natural ecosystems by reducing and controlling the spread of INS. The plan includes a recommendation to limit foot traffic and vehicle traffic in areas where INS are present to prevent the spread of the invasive and exotic species. Equipment moving through these areas needs to be washed so that all seedlings are removed before the equipment is transferred to a noncontaminated area. Standard operating procedures dictate that all vehicles are cleaned prior to use, which would lessen or eliminate the potential for the spread of INS.

REFERENCES

Florida Natural Areas Inventory (FNAI), 1993. Distribution of the Flatwoods Salamander (*Ambystoma cingulatum*) and the Gopher Frog (*Rana capito*) on Eglin Air Force Base, Florida, Year I. John G. Palis, Tallahassee, Florida.

Florida Natural Areas Inventory (FNAI), 2001. Field Guide to the Rare Animals of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.

Gault, K. 2006. Personal communication between Kathy Gault, Eglin Natural Resources Section, Wildlife, and Stephanie Hiers, SAIC. August 2006.

Pauly, G. B., O. Piskurek, and H. B. Shaffer. 2007. Phylogeographic concordance in the southeastern United States: the flatwoods salamander, *Ambystoma cingulatum*, as a test case. *Molecular Ecology* 16: 415-429.

Tucker, J.W., G.E. Hill, and N.R. Holler, 1996. Distribution of Nearctic-Neotropical Migrant and Resident Bird Species Among Habitats at Eglin and Tyndall Air Force Bases, Florida. Alabama Cooperative Fish and Wildlife Research Unit, Auburn University.

U.S. Air Force, 2003. Eglin Military Complex Environmental Baseline Study Resource Appendices, Volume 1: Eglin Land Test and Training Range.

U.S. Air Force, 2006. Threatened and Endangered Species Component Plan, Eglin AFB, FL. 96 CEG/CEVSN.

U.S. Air Force, 2007. Integrated Natural Resources Management Plan, Eglin AFB, FL. 96 CEG/CEVSN.

U.S. Fish and Wildlife Service (USFWS). 1998. Okaloosa Darter (*Etheostoma okaloosae*) Recovery Plan (Revised). Atlanta, GA 42p.

APPENDIX E

ENVIRONMENTAL RESTORATION PROGRAM AND LEGACY DEBRIS PIT SITES

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin*

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|----------------------------|--|--------------------------------|--|------------|---|---|---|
| DP-09 | LUC | Mullet Creek Drum Disposal Area | ERP Site D2 | Just south of SR 218 past the C-52 Range Gate and 0.6-mile east of Mullet Creek Fork | -- | Pesticides (aldrin, heptachlor, delta-BHC), dioxins, PAHs (benzo(a)pyrene), and metals (aluminum, arsenic, manganese, and selenium) | soils, groundwater, surface water and sediments | Site DP-09 was used for the indiscriminate disposal of hardfill (plastics, drums, concrete, etc.) between the late 1960s and early 1970s. The site was discovered in 1981. A removal of 663 drums and approximately 120 cubic yards of debris was completed in 1988. Only nine drums contained material (herbicides) of sufficient quantity for sampling and analysis. The drums were disposed of at a hazardous waste landfill. Site DP-09 is managed under LUCs. Continue maintenance of LUCs with 5-year reviews. |
| OT-83 | LUC (permanent) | Cattle Dipping Vat Pocosin Pond | AOC-113 | Reservation | 0.76142 | Arsenic | Soil | The cattle dipping vat at site OT-83 was a concrete structure set into the ground that was associated with the Cattle Tick Fever Eradication Program (1917-1944). Because of the contents of the dipping solution used in the program, the vat at AOC-113 represented a potential source of contamination (arsenic, pesticides, and/or other constituents). The results of an SI performed in 1995 indicated the presence of arsenic-impacted soils. SI results indicated no groundwater impacts. An ICM has been completed at Site OT-83 in support of No Further Investigative Action with LUCs. The vat and drip pad structures were removed from the site as part of the ICM. |
| OT-89 | LUC – Long Term Management | Eglin Golf Course Maintenance Facility | -- | Valparaiso, 0.5 miles north of John C. Sims Parkway on Highway 85 | -- | Heptachlor epoxide | Groundwater | Site OT-89 was identified as a potential source of environmental concern associated with the handling and storage of pesticides. The former pesticide storage building, Building 1537, was used from the mid-1950s to 1986, when it was razed. In 1995, an SI/RFA was completed. Potential soil and groundwater impacts were evaluated. In 1998 and 1999, an SI Addendum was completed. NFA for soils was approved in January 2000. A risk evaluation was conducted for the site. Under the current land use scenarios, there are no unacceptable risks; however, there would be risks to future hypothetical residents. A Statement of Basis |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|-------------|--|--------------------------------|--|--|--------------|------------------------|---|
| | | | | | | | | has been prepared which specifies LTM with LUCs. A LUCIP has also been prepared and submitted. |
| OT-100 | LUC | Cattle Dipping Vat - Shoal River | POI-300 | Reservation, just south of the Shoal River | 25-feet long; 3-feet wide; 4-feet deep | Arsenic | Soils | Site OT-100, Cattle Dipping Vat - Shoal River, was associated with the Cattle Tick Fever Eradication Program. The former cattle dipping vat (demolished during ICM activities) was constructed of concrete and had a few cracks along the sides. The vat was approximately 25-feet long by 3-feet wide and approximately 4-feet deep. Standing water was present in the vat. A 10-foot by 10-foot concrete drip pad was on the south side of the vat. A PA (Rust, 1997) and subsequent SI (Rust, 1998) discovered the presence of arsenic-impacted soil. An ICM was conducted in which the vat and arsenic-contaminated soils were removed. During the ICM, arsenic-contaminated soils were removed above industrial cleanup levels, but soils above residential cleanup levels were left in place. Based on the risk evaluation, there are future hypothetical risks under future residential land use scenarios; therefore, LUCs were recommended. LUCs will remain in force perpetually until exit levels specified in the Statement of Basis are met. |
| OT-262 | LUC | Cattle Dipping Vat - Auxiliary Field No. 4 | POI-336 | North of Aux. Field 4 on Eglin Reservation | 0.39879 | Arsenic | Soil | The cattle dipping vat at site OT-262 was a concrete structure set into the ground that was associated with the Cattle Tick Fever Eradication Program (1917 to 1944). Because of the contents of the dipping solution used in the program, the vat at POI No. 336 represented a potential source of contamination (arsenic, pesticides, and/or other constituents). The results of an SI performed in 1998 indicated arsenic-impacted surface and subsurface soil. An RFI and an ICM have been completed at Site OT-262 in support of No Further Investigative Action with LUCs. The vat and drip pad structures were removed from |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|-------------|--|--------------------------------|---|---------------|--------------|------------------------|--|
| OT-263 | LUC | Cattle Dipping Vat – Kepner Pond | NA | Reservation, 1.5 miles east of Auxiliary Field No. 4 and 1 mile west of Kepner Pond | 4,000 sq. ft. | Arsenic | Soils | <p>the site as part of the ICM.</p> <p>The former cattle dipping vat at site OT-263 (demolished and removed during ICM activities) was constructed of concrete and was approximately 30-feet long by 3-feet wide by 5-feet deep. Site OT-263 is associated with the Cattle Tick Fever Eradication Program, which the state of Florida enacted in 1917 and discontinued in 1944. The site was identified as a potential source of environmental contamination in 1994. In 1998, an SI was performed at the site. The SI results indicated elevated concentrations of arsenic in surface and subsurface soils at the site. An RFI and ICM were performed at the site in 1999. During the ICM, arsenic-contaminated soils were removed above industrial cleanup levels but soils above residential cleanup levels were left in place. The impacted soils (to recreation scenario) have been removed. LUCs restricting access and maintaining controls on the site have been approved by the USEPA, the FDEP, and the public, as the selected remedy. LUCs will remain in force perpetually until exit levels specified in the Statement of Basis are met.</p> |
| OT-264 | LUC | Cattle Dipping Vat – Range Road 678 and Range Road 234 | POI 388 | Reservation, 1.5 miles northeast of Test Area A-31 | 8,500 sq. ft. | Arsenic | Soils | <p>Site OT-264 was associated with the Cattle Tick Fever Eradication Program. In February 1998, an SI was conducted to determine the extent of arsenic-impacted soil. The SI results indicated elevated concentrations of arsenic in surface and subsurface soils at the site. In 1999, an RFI and ICM were conducted. During the ICM, arsenic-contaminated soils were removed above industrial cleanup levels, but soils above residential cleanup levels were left in place. The impacted soils (to a recreational scenario) have been removed. LUCs restricting access and maintaining controls on the site have been approved by the USEPA, the FDEP, and the public, as the selected remedy. LUCs will remain in force perpetually until exit levels</p> |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|-------------|--|--------------------------------|--|---------------------------|--------------|------------------------|---|
| OT-265 | LUC | Cattle Dipping Vat – Owls' Head Branch | POI 391 | Reservation, 500 feet west of U.S. Highway 331 | 4, 000 sq. ft. | Arsenic | Soils | specified in the Statement of Basis are met. Site OT-265 was associated with the Cattle Tick Fever Eradication Program. In March 1998, an SI was performed at the site. The SI results indicated elevated concentrations of arsenic in surface and subsurface soils at the site. An RFI and an ICM were performed at the site in 1999. During the ICM, arsenic-contaminated soils were removed above industrial cleanup levels, but soils above residential cleanup levels were left in place. The impacted soils (to a recreational scenario) have been removed. LUCs restricting access and maintaining controls on the site have been approved by the USEPA, the FDEP, and the public, as the selected remedy. LUCs will remain in force perpetually until exit levels specified in the Statement of Basis are met. |
| OT-269 | LUC | Cattle Dipping Vat – Cherry Branch | POI-395 | Reservation | 30-feet long; 4-feet deep | Arsenic | Soils | Site OT-269 was associated with the Cattle Tick Fever Eradication Program. In September 1999, an SI was performed at the site. SI results indicated elevated concentrations of arsenic in surface and subsurface soils at the site. An RFI and ICM were performed at the site in 2001. The ICM activities included excavation and offsite disposal of approximately 307 cubic yards (461 tons) of arsenic-impacted soils. During the ICM, arsenic-contaminated soils were removed above industrial cleanup levels, but soils above residential cleanup levels were left in place. The impacted soils (to a recreational scenario) have been removed. LUCs restricting access and maintaining controls on the site have been approved by the USEPA, the FDEP, and the public, as the selected remedy. LUCs will remain in force perpetually until exit levels specified in the Statement of Basis are met. |
| OT-270 | LUC | Cattle Dipping Vat - Malone Creek | POI-396 | East of Camp Rudder on Eglin Reservation | 5.83476 | Arsenic | Soil | The cattle dipping vat at site OT-270 was a concrete structure set into the ground and was associated with the Cattle Tick Fever Eradication Program (1917 to 1944). Because of the contents of the dipping solution (arsenic, |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|-------------|------------------------------------|--------------------------------|--|---------------------------|--------------|------------------------|---|
| | | | | | | | | pesticides, and/or other constituents) used in the program, the vat at POI-396 represented a potential source of contamination. The results of an SI and an RFI performed in 1999 and 2000 indicated the presence of arsenic-impacted surface and subsurface soils. Site groundwater has not been impacted. An ICM has been completed at Site OT-270 in support of No Further Investigative Action with LUCs. The vat and drip pad structures were removed from the site as part of the ICM. |
| OT-271 | LUC | Cattle Dipping Vat - Choctaw Field | POI-398 | East of Choctaw Field on Eglin Reservation | 0.22906 | Arsenic | Soil | The cattle dipping vat at site OT-271 was a concrete structure set into the ground and was associated with the Cattle Tick Fever Eradication Program (1917 to 1944). Because of the contents of the dipping solution (arsenic, pesticides, and/or other constituents) used in the program, the vat at POI-398 represented a potential source of contamination. The results of an SI and an RFI performed in 1999 and 2000 indicated the presence of arsenic-impacted surface and subsurface soils. Site groundwater had not been impacted. An ICM has been completed at Site OT-271 in support of No Further Investigative Action with LUCs. The vat and drip pad structures were removed from the site as part of the ICM. |
| SS-278 | LUC | Cattle Dipping Vat – Green Ponds | POI-508 | Reservation | 25-feet long; 4-feet deep | Arsenic | Soils | Site SS-278 is located in the Western Highlands Physiographic District of the Gulf Coastal Physiographic Province and was associated with the Cattle Tick Fever Eradication Program. In summer 2004, an SI was performed at the site. SI results indicated elevated concentrations of arsenic in surface and subsurface soils at the site. An ICM was performed at the site in late summer 2004. The ICM activities included excavation and offsite disposal of approximately 180 tons of arsenic-impacted soils. During the ICM, arsenic-contaminated soils were removed above industrial cleanup levels, but soils above residential cleanup levels were left in place. |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|-------------|-------------------------------|--------------------------------|--|------------|------------------------|------------------------|---|
| | | | | | | | | LUCs restricting access and maintaining controls on the site are being implemented and an SB is being developed. LUCs will remain in force perpetually until exit levels specified in the SB are met. |
| SS-274 | ACTIVE | Duke Field Fire Training Area | FT-27 | Duke Field | -- | Benzene, 1,1-DCE, VOCs | Soils and Groundwater | During the period of active use, the area around Site SS-274 (former ERP Site FT-27) consisted of two circular burn pits approximately 250 feet apart. The site is no longer in use, and the pit boundaries are not distinguishable. Operation of the site began in the late 1950s. The areas were used for the training of fire protection personnel and for the disposal of waste fuels, oils, solvents, and contaminated fuels. Petroleum products were sprayed onto mock buildings, cars, and planes, then ignited and extinguished by the trainees. The duration of facility operations is unknown, but the site is no longer in use. Active remedial measures at Site SS-274 are currently underway with the operation, maintenance and monitoring of an AAS/TESS/SVE and off-gas systems. The size and scope of the remedial measures outlined in the SS-274 RAP. The remediation system at SS-274 is anticipated to continue to operate an estimated three years. |
| POI-500 | CLOSED | Range Road 291 Bermed Area | -- | Reservation, adjacent to Santa Rosa County Holley Landfill | -- | BTEX | Soil and Groundwater | POI-500 was brought to Eglin's attention by a Santa Rosa County report <i>Remedial Action Progress Report & Eglin AFB Site Initial Assessment for Holley Landfill</i> . In the report, an area was identified from the Florida Department of Transportation aerial photographs and was described as an "old Eglin AFB Waste Site." The report states that the Eglin site represents a source of contamination in several of the county's down gradient monitoring wells. In 2000 and 2001, Eglin performed SIs entailing surface geophysics, test pit trenches, soil borings, installation, and sampling of groundwater monitoring wells. The SI Report was submitted in the summer of 2002 and recommended NFA based on the Santa Rosa County Landfill being |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|----------------|-------------------------------------|--------------------------------|------------------------|------------|-------------------|------------------------|---|
| | | | | | | | | the upgradient source of contamination. Eglin, Santa Rosa County, and the FDEP have been in discussion on source of BTEX contaminants identified in the groundwater under the site. The FDEP SIS Section collected additional soil and groundwater samples during two separate events in 2005 and 2007. Eglin collected split samples during the two FDEP SIS sampling events. |
| AOC-07 | LUC – Internal | Auxiliary Field No. 6 Disposal Area | -- | Camp Rudder | 2 | Subsurface metals | Soils | Site AOC-07 consists of a partially cleared area about two acres in size, associated with former disposal activities. The site is reportedly inactive and was operated from the 1940s to the 1970s. Disposal activities may have occurred in the recent past. The types and quantities of wastes disposed of at this site are not known. Discontinuous, irregular-shaped, earthen berms were constructed between 1986 and 1987 to presumably prevent storm water runoff from entering a nearby creek. Geophysics conducted March 1995 identified some anomalies indicative of subsurface metal. The results of an SI performed in 1997 indicated no groundwater impacts. Several metals were detected in site soils at relatively low concentrations. SDR activities were performed at the site in September 1998. Based on the results, a reevaluation of SI data and a statistical analysis (arsenic SOP), the metals in the soil are no longer considered to be COPCs. Based on the reevaluation, NFA without LUCs was recommended for the site. |
| AOC-91 | LUC – Internal | Pocosin Pond | -- | Pocosin Pond Test Area | NA | DU | Soil | Testing of DU at the Pocosin Pond Test Area, Site AOC-91, may have occurred in the early 1960s. A scooping survey was performed in 2001. On the basis of this survey, no radiological contamination was identified and NFA was recommended. |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|----------------|--|--------------------------------|--|------------|--|--|---|
| POI-417 | LUC – Internal | Site N-18, East Bay Swamp C-141 Crash Site | -- | Western portion of Eglin Reservation in East Bay Swamp | -- | DU | Soils and Groundwater | On February 20, 1989, a C-141 aircraft crashed in the East Bay swamp, approximately 4 miles north of Hurlburt Field. Two 150-pound DU counterweights were located in the wings of the aircraft. The U.S. Air Force Occupational and Environmental Health Laboratory concluded that the counterweights were probably intact and buried underneath several feet of water and mud, and therefore posed no threat to the public. On April 13, 1989, the U.S. Air Force Radioisotope Committee recommended that the counterweights should be left in place. NRC approved this request in spring 2000. NFA was recommended, and has been approved. Eglin will manage the site with internal LUCs. |
| POI-418 | LUC – Internal | C-52 Scrap Yard | -- | Just north of Test Area C-52E | -- | Mg - Th | Soils | Large volume of surface debris covers Site POI-418. Ground surface under this material may be impacted with Mg-Th. In spring 2000, Eglin removed the waste and appropriately disposed of it off site. SI field work was performed in summer 2000. SI/ICM report was submitted in June 2002 and recommended NFA under current land use restrictions within industrial scenarios, which has been approved. Eglin will manage the site with internal LUCs. |
| POI-419 | LUC – Internal | Test Area C-74L Dump Site | -- | Just east of C-74L | -- | BOMARC fragments, tanks, construction debris, UXO, and miscellaneous items | Soil | Accumulation of debris on ground surface at Site POI-419 includes possible BOMARC fragments, tanks, construction debris, UXO, and miscellaneous items. SI and ICM were performed in summer 2001. This work included a FIDLER survey, soil sampling, and the removal of observed debris and DU fragments from the site. SI report was submitted in fall 2001 and recommended NFA under current land use restrictions within industrial scenarios, which has been approved. Eglin will manage the site with internal LUCs. |
| LF-12 | LUC – Leased | Niceville/Vaiparaiso Landfill | -- | Valparaiso | 76 | CVOCs, petroleum hydrocarbons, pesticides, dioxins, and metals | Soils, groundwater, surface water, and sediments | The Site LF-12 landfill was constructed and used by the encroachment customer, Okaloosa County, between 1961 and 1987. The FDEP issued solid waste permit SO46-303737 to the |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|--------------|------------------------|--------------------------------|---|------------|--|---------------------------|---|
| | | | | | | | | Okaloosa Board of County Commissioners establishing a ZOD for contaminants on the property. The site received Class I waste from 1961 until late 1982, and Class III waste from 1961 until closure in January 1987. Since the site is managed by Okaloosa County, IRP Site LF-12 is considered closed with regard to Eglin's involvement. Okaloosa County is negotiating with the FDEP on the future disposition of LF-12. |
| LF-21 | LUC – Leased | Wright Landfill | ERP Site D37 | Reservation | 252 | VOCs, including benzene; dichlorobenzene; 1,2-dichloroethene; and vinyl chloride | Off-site monitoring wells | Landfill operations began at Site LF-21 in the 1960s when Eglin AFB leased 160 acres to the encroachment customer, Okaloosa County Board of County Commissioners. The lease expired on 30 June 1974. To date, the FDEP has held Okaloosa County primarily accountable for compliance with solid waste disposal site regulations and subsequent groundwater and surface water contamination cleanup requirements. A groundwater remediation system has been installed at the landfill and is currently operating. The monitoring wells are sampled in accordance with FDEP requirements, and Eglin AFB is apprised of the results of the sampling and analysis. Currently, the landfill vicinity is used for mulching of yard wastes from the surrounding communities. |
| LF-95 | LUC – Leased | Holly Navarre Landfill | AOC 49 | Reservation, one mile east of State Road 87 and River Road intersection, at the end of River Road | 160 | VOCs (benzene and vinyl chloride) and iron | Groundwater | The Site LF-95 landfill, now closed, was permitted by the FDEP to operate as a Class I sanitary landfill and, during its operation, accommodated residential, agricultural, municipal, and commercial waste materials. The landfill was constructed and used by the encroachment customer, Santa Rosa County, from 1977 until April 1992. A Phase I records search identified the site as a potential source of environmental contamination. Subsequently, contamination assessments were conducted from 1988 to 1993. Due to the complete failure of the old system, a new remedial system was installed. Eglin AFB provides |

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| SITE ID | SITE STATUS | SITE TITLE | ALTERNATIVE (previous) SITE ID | LOCATION | AREA ACRES | CONTAMINANTS | MEDIA OF CONTAMINATION | DESCRIPTION |
|---------|-------------|-----------------------------------|--------------------------------|--|------------|---|------------------------|--|
| | | | | | | | | indirect oversight of the remedial activities and long-term property management requirements that Santa Rosa County is required to complete. Continued groundwater and system monitoring by Okaloosa County will be required. A future risk assessment is a consideration for this site due to the proximity of surface water, human habitation, and the common use of wells for the delivery of potable water. |
| POI-516 | ACTIVE | Honey Creek Cattle Dipping Vat | -- | Reservation, north-central portion approximately 3.3 miles northeast of Duke Field | -- | Potentially arsenic (based on historical data from other cattle dipping vat sites at Eglin) | -- | POI-516 was associated with the Cattle Tick Fever Eradication Program (1917-1944). Based on the PA of the site and SSIs conducted at other cattle dipping vat sites at Eglin, POI-516 presents potential sources of contamination and it has been recommended that an SI be performed at the site. ICMICMs consisting of excavation and off-site disposal of impacted soils, backfilling, and site restoration activities are being implemented while the SI is being conducted. ICM work will be modified, as needed, upon results of the SI. |
| POI-517 | ACTIVE | Pine Log Creek Cattle Dipping Vat | -- | Reservation, north-central portion approximately 2 miles southeast of Duke Field | -- | Potentially arsenic (based on historical data from other cattle dipping vat sites at Eglin) | -- | POI-517 is associated with the Cattle Tick Fever Eradication Program (1917-1944). Based on the PA of the site and SIs conducted at other cattle dipping vat sites at Eglin, POI-517 presents potential sources of contamination and it has been recommended that an SI be performed at the site. ICMICMs, consisting of excavation and off-site disposal of impacted soils, backfilling, and site restoration activities, are being implemented while the SI is being conducted. ICM work will be modified, as needed, upon results of the SI. |

* The information in this table is from the Eglin Environmental Restoration Program Sites Status Report (SSR) of 2007 issued by the Restoration Branch of Eglin AFB Civil Engineering Group (CEG/CEVR) and the Preliminary Assessment (PA) Report and Site Investigation (SI)/Interim Corrective Measures (ICM) Work Plan POI No. 516 and 517 Honey Creek and Pine Log Creek Cattle Dipping Vats of 2007. If more information is desired concerning these and other ERP sites, please refer to the SSR 2007 and PA Report and SI/ICM Work Plan. This is the most current information available at this time.

Table E-1. Active Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd *

| | | | | | |
|--------|--|-------|--|-------|---|
| AOC | Area of Concern | LUC | Land Use Control | SB | Statement of Basis |
| BHC | Benzene Hexachloride | LUCIP | Land Use Control Implementation Plan | SDR | Surface Debris Removal |
| BTEX | Benzene, Toluene, Ethylbenzene, and Total Xylenes | Mg | Magnesium | SI | Site Investigation |
| COPC | Chemical of Potential Concern | MNA | Monitored Natural Attenuation | SOP | Standard Operating Procedure |
| DCE | Dichloroethylene | NFA | No Further Action | SR | State Road |
| DU | Depleted Uranium | NRC | Nuclear Regulatory Commission | SS | Spill Site |
| ERP | Environmental Restoration Program | OT | Other | ST | Storage Tank |
| FDEP | Florida Department of Environmental Protection | PA | Preliminary Assessment | Th | Thorium |
| FIDLER | Field Instrument for the Detection of Low Energy Radioactivity | PAH | Polycyclic Aromatic Hydrocarbons | USEPA | United States Environmental Protection Agency |
| FT | Fire Training | POI | Point of Interest | UXO | Unexploded Ordnance |
| ICM | Interim Corrective Measure | RAP | Remedial Action Plan | VOC | Volatile Organic Compound |
| LTM | Long-Term Monitoring | RCRA | Resource Conservation and Recovery Act | ZOD | Zone of Discharge |
| | | RFA | RCRA Facility Assessment | | |
| | | RFI | RCRA Facility Investigation | | |

Reference: U.S. Air Force, 2007. *Environmental Restoration Program (ERP) Sites Status Report (SSR)*. Air Armament Center, Eglin AFB, Florida. June 2007.

Table E-2. LDP Sites Found in the Region of Influence on the Interstitial Area of Eglin¹

| Map ID | Location | Description | POI # |
|--------|------------------------------|---|---------|
| 01 | Atwell Pond | The area of concern is marked with one metal blue sign, which indicates that there could be munitions residue buried in the area. A large number of indications of metal anomalies are in the ground surrounding the sign and metal scrap can be seen sticking out of the ground. The area is approximately 75 feet by 100 feet in size and located at the entrance of a sand/clay pit. | POI 600 |
| 02 | Auxiliary Field 5 Location A | The site is a known LDP. The area is surrounded by a fence and is posted with signs. A number of munitions are on the surface, and there are a large number of anomalies in the ground. | POI 601 |
| 04 | Range 3A Location D | The suspect site is a sand/clay pit. A large mound is the area of concern; there are a large number of metal anomalies in the ground. The area of concern is approximately 25 feet by 25 feet. | POI 603 |
| 05 | Range 6A Location H | The area is a possible munitions disposal pit. A large number of metal anomalies can be found in the area. The depression is approximately 40 feet off the roadway, and measures approximately 30 feet by 20 feet. | POI 604 |
| 06 | Range 66 Location C | Large anomalies found inside a trench area approximately 20 feet x 50 feet. | POI 605 |
| 07 | Test Area A-77 Location C | The site is approximately 150 feet off the road. The area of concern is approximately 30 feet by 50 feet. There are exposed bombs, large sections of metal scrap, 2.75" warheads and other metal parts partially exposed. A large number of anomalies in the area. | POI 606 |
| 08 | Test Area B-70 Location A | The area of concern is known to have munitions on the surface, and is suspected to be an LDP. Munitions found in the area included bomblets. | POI 607 |
| 09 | Test Area B-70 Location B | The area of concern is a known LDP. The area is marked with a sign. There are metal drums and munitions on the surface. There are bomblets on the surface. The area is approximately 50 feet by 100 feet in size, off the road approximately 150 feet. | POI 608 |
| 10 | Test Area B-70 Location D | There are munitions on the surface and partially buried. The area is approximately 50 feet by 200 feet in size. | POI 609 |

Table E-2. LDP Sites Found in the Region of Influence on the Interstitial Area of Eglin Cont'd¹

| Map ID | Location | Description | POI # |
|--------|------------------------------|--|---------|
| 11 | Test Area B-71 Location A | Trash pile approximately 30 feet by 15 feet in size, located at the edge of the woods. Easy access, good roads. There were no munitions found in the area, but there is ammunition-packaging material inside the pit. Large blocks of concrete and other building materials are next to the pit. | POI 610 |
| 12 | Test Area B-71 Location C | Large area with a strong reading to indicate large metal anomalies. Area is approximately 15 feet by 25 feet. Area is in the sand/clay pit and is clear of trees. | POI 611 |
| 13 | Test Area B-75 | This is a known LDP, located approximately 75 feet off the western boundary of Test Area B-75. The area measures approximately 20 feet by 150 feet, and is from 1 foot to approximately 8 feet deep. A number of bomb bodies, and bomb fins can be found on the surface and protruding from the ground. | POI 612 |
| 14 | Test area C-2 Location A | The area of concern is located outside the C-2 range boundaries inside a sand/clay pit. The site has a number of metal hits in an area around a small mound in the center of the sand/clay pit area. Munitions found on the surface and in the area include 40mm cartridge cases, small arms cartridge cases, expended fuzes from practice grenades, and one 5" rocket motor. | POI 613 |
| 15 | Test Area C-2 Location H | The area is approximately 50 feet square. One 2.75 rocket warhead found on the surface, and a large number of metal anomalies in the area. | POI 614 |
| 16 | Test Area C-2A Location F | Located on the western section of the C-2A rail tracks, on the north side of the tracks close to the center at a crossroad. The area is approximately 50 feet in diameter, and a large earth mound with railroad timbers and metal scrap lies next to the area of concern. One bomb fin is located on the surface, and a large number of metal anomalies are in the area. | POI 615 |
| 19 | C-52B Near C-52B | The site is AOC-4 which is a known LDP. The site is fenced in and controlled. The site is a munitions disposal area that was initially identified in 1981. | POI 618 |
| 21 | Test Area C-64 Location A | The area is a large sand/clay pit. There are exposed munitions on the surface and large bomb bodies half buried in the area. The site also has been used for disposal of a CBU storage container with munitions inside. There are BLU 22/B Test Units laying on the surface and buried half exposed in the area. The area is approximately fifty square feet in size. | POI 620 |
| 22 | Test Area C-72 Location H | The area of concern is an area measuring 100 feet by 200 feet. The area has been disturbed; there are a large number of anomalies in the mounds and trenches. Metal scrap from munitions and construction debris are on the surface. | POI 621 |
| 23 | Test Area D-51 Location A | The area of concern is outside the fence on the northwest side of Test Area D-51, and across the road from the fence. The site is located into the woods approximately 75 feet. There is a large mound approximately 18 feet in diameter and three to four feet at the tallest point. Munitions on the surface include two cluster bombs, without fuzes. There are a large number of anomalies in the area surrounding the mound, as well as in the mound. | POI 622 |
| 24 | Test Area D-51 Location B | Location is on the outside of the D-51 range fence, on the northwest edge of the triangle shaped range. Surface debris has been removed in the past, but there are still a number of anomalies in the ground. | POI 623 |

1. Only LDPs that are located within the Interstitial ROI, as defined in Table 1-1, are listed.

Source: U.S. Army Corps of Engineers, St. Louis District, 2002. Archives Search Report for Legacy Debris Pits at Eglin AFB. Prepared for AAC/96th ABW/EMR, April 2002.

APPENDIX F

AIR QUALITY

SUPPLEMENTAL INFORMATION

AIR QUALITY SUPPLEMENTAL INFORMATION

This appendix provides a general overview of the federal and state regulatory air quality programs. Additionally, the appendix discusses emission factor development and calculations including assumptions employed in the air quality analyses presented in the Air Quality sections of this REA.

AIR QUALITY PROGRAM OVERVIEW

In order to protect public health and welfare, the USEPA has developed numerical concentration-based standards or National Ambient Air Quality Standards (NAAQS) for six “criteria” pollutants (based on health related criteria) under the provisions of the Clean Air Act Amendments of 1970. There are two kinds of NAAQS: primary and secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (Government Printing Office, no date).

The Clean Air Act (CAA) gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the federal program. The Division of Air Resource Management within the Florida Department of Environmental Protection (FDEP) administers the state’s air pollution control program under authority of the Florida Air and Water Pollution Control Act and the Environmental Protection Act.

Florida has adopted the NAAQS as written in the federal regulations (40 CFR 51), except Florida has established a more conservative standard for sulfur dioxide (SO₂). USEPA has set the annual and 24-hour standards for SO₂ at 0.03 parts per million (ppm) (80 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) and 0.14 ppm (365 $\mu\text{g}/\text{m}^3$) respectively. Florida has adopted the more stringent annual and 24-hour standards of 0.02 ppm (60 $\mu\text{g}/\text{m}^3$) and 0.1 ppm (260 $\mu\text{g}/\text{m}^3$) respectively. In addition, Florida has adopted the national secondary standard of 0.50 ppm (1,300 $\mu\text{g}/\text{m}^3$). Federal and State of Florida ambient air quality standards are presented in Table F-1.

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the United States as having air quality better than (attainment) the NAAQS, worse than (nonattainment) the NAAQS, and unclassifiable. Those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for a particular pollutant are “unclassifiable” and are treated as attainment until proven otherwise. Attainment areas can be further classified as “maintenance” areas. Maintenance areas are those areas previously classified as nonattainment and have successfully reduced air pollutant concentrations below the standard. Maintenance areas are under special maintenance plans and must operate under some of the nonattainment area plans to ensure compliance with the NAAQS. All areas of the state of Florida are in compliance with the NAAQS.

A general conformity analysis is required if: (1) the action’s direct and indirect emissions have a potential to emit (PTE) one or more of the six criteria pollutants at or above emission rates shown in Table F-2 or Table F-3, or (2) the action’s direct and indirect emissions of any criteria

pollutant represent 10 percent of a nonattainment or maintenance area's total emissions inventory for that pollutant.

Table F-1. National and State Ambient Air Quality Standards

| Criteria Pollutant | Averaging Time | Federal Primary NAAQS ⁽⁸⁾ | Federal Secondary NAAQS ⁽⁸⁾ | Florida Standards |
|--|---|--|--|---|
| Carbon Monoxide (CO) | 8-hour ⁽¹⁾ | 9 ppm (10 mg/m ³) | No standard | 9 ppm (10 µg/m ³) |
| | 1-hour ⁽¹⁾ | 35 ppm (40 mg/m ³) | No standard | 35 ppm (40 µg/m ³) |
| Lead (Pb) | Quarterly | 1.5 µg/m ³ | 1.5 µg/m ³ | 1.5 µg/m ³ |
| Nitrogen Dioxide (NO ₂) | Annual | 0.053 ppm (100 µg/m ³) | 0.053 ppm (100 µg/m ³) | 0.053 ppm (100 µg/m ³) |
| Particulate Matter \leq 10 Micrometers (PM ₁₀) | Annual ⁽²⁾ 24-hour ⁽³⁾ | Revoked 150 µg/m ³ | Revoked 150 µg/m ³ | 50 µg/m ³ 150 µg/m ³ |
| Particulate Matter $<$ 2.5 Micrometers (PM _{2.5}) | Annual ⁽⁴⁾ 24-hour ⁽⁵⁾ | 15 µg/m ³ 35 µg/m ³ | 15 µg/m ³ 35 µg/m ³ | 15 µg/m ³ 65 µg/m ³ |
| Ozone (O ₃) | 1-hour ⁽⁷⁾ | 0.12 ppm (235 µg/m ³) | 0.12 ppm (235 µg/m ³) | 0.12 ppm (235 µg/m ³) |
| | 8-hour ⁽⁶⁾ | 0.08 ppm (157 µg/m ³) | 0.08 ppm (157 µg/m ³) | |
| Sulfur Dioxide (SO ₂) | Annual | 0.03 ppm (80 µg/m ³) | No standard | 0.02 ppm (60 µg/m ³) |
| | 24-hour ⁽¹⁾ | 0.14 ppm (365 µg/m ³) | No standard | 0.10 ppm (260 µg/m ³) |
| | 3-hour ⁽¹⁾ | No standard | 0.50 ppm (1300 µg/m ³) | 0.50 ppm (1300 µg/m ³) |

Sources: USEPA, 2006a (Federal Standards); FDEP, 2006 (Florida Standards)

ppm = parts per million; mg/m³ = milligrams per cubic meter; µg/m³ = micrograms per cubic meter

1. Not to be exceeded more than once per year.
2. Due to lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM₁₀ standard in 2006 (effective 17 December 2006).
3. Not to be exceeded more than once per year on average over 3 years.
4. To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
5. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each community-oriented monitor within an area must not exceed 35 mg/m³ (effective 17 December 2006).
6. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
7. (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is \leq 1; (b) As of 15 June 2005, the USEPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas.
8. Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°Celcius and a reference pressure of 760 millimeters of mercury; ppm refers to parts per million by volume.

Table F-2. Emission Rates for Criteria Pollutants in Nonattainment Areas*

| Pollutant | Emission Rate (tons/year) |
|--|---------------------------|
| Ozone (Volatile Organic Compounds [VOCs] or NO _x) | |
| Serious nonattainment areas | 50 |
| Severe nonattainment areas | 25 |
| Extreme nonattainment areas | 10 |
| Other ozone nonattainment areas outside an ozone transport region | 100 |
| Marginal and moderate nonattainment areas inside an ozone transport region | |
| VOC | 50 |
| NO _x | 100 |
| CO: All nonattainment areas | 100 |
| SO ₂ or NO ₂ : All nonattainment areas | 100 |
| PM ₁₀ | |
| Moderate nonattainment areas | 100 |
| Serious nonattainment areas | 70 |
| PM _{2.5} | |
| Direct emissions | 100 |
| SO ₂ | 100 |
| NO _x (unless determined not to be a significant precursor) | 100 |
| VOC or ammonia (if determined to be significant precursors) | 100 |
| Pb: All nonattainment areas | 25 |

Source: USEPA, 2006c

CO = carbon monoxide; NO₂ = nitrogen dioxide; NO_x = nitrogen oxides; Pb = lead; PM_{2.5} = particulate matter with a diameter less than or equal to 2.5 microns; PM₁₀ = particulate matter with a diameter less than or equal to 10 microns; SO₂ = sulfur dioxide; SO_x = sulfur oxides; VOC = volatile organic compound**De minimus* threshold levels for conformity applicability analysis.**Table F-3. Emission Rates for Criteria Pollutants in Attainment (Maintenance) Areas***

| Pollutant | Emission Rate (tons/year) |
|--|---------------------------|
| Ozone (NO _x , SO ₂ , or NO ₂): All maintenance areas | 100 |
| Ozone (VOCs) | |
| Maintenance areas inside an ozone transport region | 50 |
| Maintenance areas outside an ozone transport region | 100 |
| CO: All maintenance areas | 100 |
| PM ₁₀ : All maintenance areas | 100 |
| PM _{2.5} | |
| Direct Emissions | 100 |
| SO ₂ | 100 |
| NO _x (unless determined not to be a significant precursor) | 100 |
| VOC or ammonia (if determined to be significant precursors) | 100 |
| Pb: All maintenance areas | 25 |

Source: USEPA, 2006c

CO = carbon monoxide; NO₂ = nitrogen dioxide; NO_x = nitrogen oxides; Pb = lead; PM_{2.5} = particulate matter with a diameter less than or equal to 2.5 microns; PM₁₀ = particulate matter with a diameter less than or equal to 10 microns; SO₂ = sulfur dioxide; SO_x = sulfur oxides; VOC = volatile organic compound**De minimus* threshold levels for conformity applicability analysis.

Each state is required to develop a state implementation plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

In attainment areas, major new or modified stationary sources of air emissions on and in the area are subject to Prevention of Significant Deterioration (PSD) review to ensure that these sources are constructed without causing significant adverse deterioration of the clean air in the area. A major new source is defined as one that has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specific major source thresholds; that is, 100 or 250 tons per year based on the source's industrial category. A major modification is a physical change or change in the method of operation at an existing major source that causes a significant "net emissions increase" at that source of any regulated pollutant. Table F-4 provides a tabular listing of the PSD significant emissions rate (SER) thresholds for selected criteria pollutants (USEPA, 1990).

Table F-4. Criteria Pollutant Significant Emissions Rate Increases Under PSD Regulations

| Pollutant | Significant Emissions Rate (tons/year) |
|-----------------------------------|---|
| PM ₁₀ | 15 |
| PM _{2.5} | 10 |
| Total Suspended Particulate (TSP) | 25 |
| SO ₂ | 40 |
| NO _x | 40 |
| Ozone (VOCs) | 40 |
| CO | 100 |

Source: Title 40 CFR Part 51

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{2.5} = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; PM₁₀ = particulate matter with a diameter less than or equal to 10 microns; SO₂ = sulfur dioxide; VOC = volatile organic compound

The goals of the PSD program are to (1) ensure economic growth while preserving existing air quality; (2) protect public health and welfare from adverse effects that might occur even at pollutant levels better than the NAAQS; and (3) preserve, protect, and enhance the air quality in areas of special natural recreational, scenic, or historic value, such as national parks and wilderness areas. Sources subject to PSD review are required by the CAA to obtain a permit before commencing construction. The permit process requires an extensive review of all other major sources within a 50-mile radius and all Class I areas within a 62-mile radius of the facility. Emissions from any new or modified source must be controlled using Best Available Control Technology. The air quality, in combination with other PSD sources in the area, must not exceed the maximum allowable incremental increase identified in Table F-5. National parks and wilderness areas are designated as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development.

The areas surrounding Eglin Air Force Base and Hurlburt Field are classified as Class II. Currently, there are no designated Class III areas in the United States.

Table F-5. Federal Allowable Pollutant Concentration Increases Under PSD Regulations

| Pollutant | Averaging Time | Maximum Allowable Concentration ($\mu\text{g}/\text{m}^3$) | | |
|------------------|----------------|--|----------|-----------|
| | | Class I | Class II | Class III |
| PM ₁₀ | Annual | 4 | 17 | 34 |
| | 24-hour | 8 | 30 | 60 |
| SO ₂ | Annual | 2 | 20 | 40 |
| | 24-hour | 5 | 91 | 182 |
| | 3-hour | 25 | 512 | 700 |
| NO ₂ | Annual | 2.5 | 25 | 50 |

Source: Title 40 CFR Part 51

NO₂ = nitrogen dioxide; PM₁₀ = particulate matter with a diameter less than or equal to 10 microns; SO₂ = sulfur dioxide; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

Florida has a statewide air quality-monitoring network that is operated by the state *FDEP State Air Monitoring Reports*). Ambient air quality data from these monitors are used to assess the regions air quality in comparison to the NAAQS. The air quality is monitored for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur dioxide. The monitors tend to be concentrated in areas with the largest population densities. Not all pollutants are monitored in all areas. The air quality monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration levels to be in attainment with the standards; also included are areas where the ambient standards are being met but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

The end-result of this attainment/maintenance analysis is the development of local and statewide strategies for controlling emissions of criteria air pollutants from stationary and mobile sources. The first step in this process is the annual compilation of the ambient air monitoring results, and the second step is the analysis of the monitoring data for general air quality exceedances of the NAAQS as well as pollutant trends.

The FDEP Northwest District operates monitors in several northwest counties, including Bay, Escambia, and Santa Rosa Counties. Over the years of record there have been exceedances (pollutant concentration greater than the numerical standard) of a NAAQS. However, there has not been a violation (occurrence of more exceedances of the standard than is allowed within a specified time period) of an ambient standard (*FDEP State Air Monitoring Reports*). Currently, the state of Florida is attainment for all criteria pollutants.

Florida has a statewide air quality-monitoring network that is operated by the state *FDEP State Air Monitoring Reports*. Ambient air quality data from these monitors are used to assess the regions' air quality in comparison to the NAAQS. The air quality is monitored for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. The monitors tend to be concentrated in areas with the largest population densities. Not all pollutants are monitored in all areas. The air quality-monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration to be at levels in attainment with the standards; also included are areas where the

ambient standards are being met but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

The end result of this attainment/maintenance analysis is the development of local and statewide strategies for controlling emissions of criteria air pollutants from stationary and mobile sources. The first step in this process is the annual compilation of the ambient air monitoring results, and the second step is the analysis of the monitoring data for general air quality exceedances of the NAAQS as well as pollutant trends.

The FDEP Northwest District operates monitors in several northwest counties, including Bay, Escambia, and Santa Rosa Counties. Over the years of record there have been exceedances (pollutant concentration greater than the numerical standard) of a NAAQS. However, there has not been a violation (occurrence of more exceedances of the standard than is allowed within a specified time period) of an ambient standard (*FDEP State Air Monitoring Reports*). Currently, the state of Florida is classified as in attainment for all criteria pollutants.

PROJECT CALCULATIONS: AIR EMISSIONS

Regulatory Compliance Methodologies

Mission-generated air emissions were analyzed to enable comparison to NAAQS and the cumulative impact to the air shed within the affected Region of Influence (ROI). Activities occurring within the interstitial area that have the greatest potential to impact air quality are munitions and vehicle activities, including particulate emissions resulting from the dust of unpaved roads and trails. Aircraft emissions have been omitted from this REA, since all aircraft emissions are addressed in the *Overland Air Operations EBD* and *REA*. In order to conservatively estimate the potential impact of these operations with short-term ambient air quality, a “Closed Box Assessment” was performed. Additionally, the annual emissions were compared to the USEPA 2002 NEI for the ROI. Both techniques are described below, as well as the emissions calculations and project assumptions.

The Closed Box Assessment

The “Closed Box Assessment” (CBA) provides a means to estimate maximum short-term impacts from emissions in a given element of space. Several assumptions are incorporated into this technique. First, it assumes that emissions are homogeneously mixed and contained within a defined volume of space throughout which the activities occur. For this assessment, this volume of air is defined by vertical and lateral boundaries. The vertical boundary of altitude established was 3,000 feet above sea level (ASL) and the dimensional area within the interstitial area was utilized for lateral boundaries.

Second, it assumes that the calculated concentrations of criteria pollutants within the defined box resulting from the operations are representative activities of the maximum resultant ground-level (i.e., sea level) concentrations. Because of these assumptions, the results of these calculations are expected to indicate somewhat higher air quality impacts than those that would result from a more structured dispersion model. However, the results do provide a maximum impact scenario for comparison with established ambient air quality standards.

For this assessment, it was assumed that activities occurring within the interstitial area operated randomly. The ceiling altitude of 3,000 feet was chosen as a conservative estimate of the average height for stable temperature inversion common to the area. This type of inversion can significantly inhibit, if not effectively block, vertical mixing and widespread dispersion of some air pollutants. Therefore, pollutants can be considered confined between the base of the inversion and the ground, or that portion of the lower atmosphere commonly termed the *mixing layer*. The mixing-layer height determines the vertical extent of the dispersion process for pollutant releases below the mixing height.

A conservative 1-hour scenario was developed encompassing the individual emissions associated with mobile sources as well as ordnance and munitions activities. The scenario assumes that all activities within the year occurred during the same time frame. These calculated 1-hour emissions contributions were then compared to the appropriate NAAQS. For averaging times greater than 1 hour, the maximum concentration will generally be less than the calculated 1-hour value. The comparison is limited to those criteria pollutants directly associated with Range activities.

Vehicle Exhaust Calculations

Vehicle exhaust calculations were developed using emissions factors established by USEPA for various vehicle classes. The unit of measure for the vehicle emissions factors is represented in grams per vehicle mile traveled. These factors were correlated with the total vehicle mileage traveled in interstitial areas.

Vehicles associated with mission activities were classified into two categories, gas and diesel powered. This method of combining the USEPA's four vehicle classes into two has been previously used in the *2002 Eglin Mobile Source Emissions Inventory*. Previously, it has been determined that over 90 percent of the Eglin Range vehicular traffic is gasoline powered, while the other 9 percent is composed of diesel.

Total road miles and average total vehicle road mileage traveled on Eglin's ranges were ascertained from the *Road Range EBD* published in 2003. The total road miles within the interstitial area was compared to the total Eglin Range and converted to a percentage. It was assumed that the percentage of road miles that compose the interstitial area was a direct correlation with the vehicle miles traveled within interstitial areas. This provides a conservative estimate of vehicle miles traveled.

Using the assumptions described, the vehicle miles traveled for the individual classes of vehicles were extrapolated. Emissions were ascertained utilizing the emissions factors and mathematical expression provided below.

Table F-6 contains the emission factors for each vehicle class.

Table F-6. Vehicle Emission Factors

| Emission Factors (g/mi) | CO | SO _x | NO _x | PM | VOC |
|-------------------------|----|-----------------|-----------------|-----|-----|
| Classes I, II | 25 | 0.11 | 2.7 | 2.9 | 2.8 |
| Classes III, IV | 5 | 0.26 | 3.6 | 3.4 | 1.2 |

CO = carbon monoxide; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxides; VOC = volatile organic compound

$$\text{Emissions (tons/yr)} = (RRM/TRRM)*TAYVM*EF*CF_1$$

$$\text{Emissions } (\mu\text{g/m}^3*\text{hr}) = (RRM/(TRRM*TV))*TAYVM*EF*CF_2$$

Where:

RRM = Range Road Miles (total miles for given range)

TRRM = Total Range Road Miles (Eglin's total range road miles)

TAYVM = Total Average Yearly Vehicle Miles traveled on Eglin's ranges

TV = Closed Box Volume

EF = Emission Factor

CF₁ = Conversion Factor (1.1E-6)

CF₂ = Conversion Factor (3.6E5)

CF₁ converts from grams to pounds, and then to tons. *CF₂* converts into micrograms and weights the value over an hour.

Vehicle Dust Emissions

When vehicles travel on unpaved roads, particulate matter (PM) is emitted into the air. In order to determine the amount of total suspended particulate matter (TSP) due to the activities on unpaved roads, several variables must be defined, such as percent surface silt content, mean vehicle weight (tons), mean vehicle speed (mph), mean number of wheels per vehicle, and some constants.

Silt content was assumed to be a conservative value of 0.001 percent due to Florida's very low material surface silt content (USEPA, 2003). The mean weight of the vehicles traveling on the unpaved roads were determined to be 3 tons, since 91 percent of the vehicles traveling on the roads are considered classes I and II, which are mainly light trucks, cars and suburban-type vehicles with weights ranging from 1.0 to 5.0 tons. Mean vehicle speed was deemed 35 mph. This value was based on previous studies, road conditions, and safety precautions considered when driving on unpaved roads. The variables and assumptions stated above along with the equation below were derived assuming dry road conditions (USEPA, 2003).

The following empirical expression was used to estimate the amount in pounds of particulate matter emitted from the unpaved road due to vehicle traffic.

$$E = k*5.9*(s/12)*(S/30)*(W/3)^{0.7}*(w/4)^{0.5}$$

Where:

VMT = Vehicle Miles Traveled
 E = emissions in (lbs)
 k = particle size multiplier
 s = silt content on road surface (percent)
 S = mean vehicle speed (mph)
 W = mean vehicle weight (tons)
 w = mean number of wheels per vehicle

Munition Emissions

Munition emissions used in the interstitial area were calculated using the following methodology. For all live munitions, net explosive weights and emission factors were needed to complete the analysis (Table F-7). Since the specific type of munition was not given or no data was available, the munition exhibiting the highest net explosive weight (NEW) was chosen for each munition for a worst-case scenario.

Emission Calculation:

$$\text{Pollutant Emission} = EF * NEW * Qty / 2000$$

Where: Pollutant Emission = emissions for the associated pollutant (i.e., CO or NO_x) (tons/yr)
 EF = emission factor for the pollutant (lb/lb NEW).
 NEW = net explosive weight (lb NEW/item).
 Qty = quantity (item/year).
 2000 = conversion from pounds to tons (1 ton = 2,000 pounds).

Table F-7. Munitions Emission Factors

| | Emission Factors (lbs/NEW lbs) | | | |
|-----------|--------------------------------|-----------------|------------------|-----------------|
| | CO | NO _x | PM ₁₀ | SO _x |
| Simulator | 0.007 | 0.002 | 0.045 | 0.000 |
| Smokes | 0.004 | 0.000 | | 0.001 |
| Flares | 0.004 | 0.004 | 0.170 | 0.000 |

Source: USEPA, 2006b

CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter with an aerodynamic diameter less than or equal to 10 microns; SO_x = sulfur oxides

National Emissions Inventory

The NEI is operated under the USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, tribes, and industries. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country on a yearly basis. The NEI includes emission estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual point or major sources

(facilities), as well as county-level estimates for area, mobile, and other sources, are currently available for years 1996 and 1999 for criteria pollutants and HAPs.

Criteria air pollutants are those for which the USEPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database:

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_x)
- Sulfur Dioxide (SO₂)
- Particulate Matter (PM₁₀ and PM_{2.5})

The NEI also includes emissions of VOCs, which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as other solvent uses. VOCs react with nitrogen oxides in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources:

- Point sources – Stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A “major” source emits a threshold amount (or more) of at least one criteria pollutant and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.
- Area sources: Small point sources such as a home or office building or a diffuse stationary source such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example; for instance, a single dry cleaner within an inventory area typically will not qualify as a point source, but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory.
- Mobile sources – Any kind of vehicle or equipment with a gasoline or diesel engine (such as an airplane or ship).

The following are the main sources of criteria pollutant emissions data for the NEI:

- For electric generating units – USEPA’s *Emission Tracking System/Continuous Emissions Monitoring Data (ETS/CEM)* and Department of Energy fuel use data.
- For other large stationary sources—state data and older inventories where state data were not submitted.
- For on-road mobile sources – The Federal Highway Administration’s estimate of vehicle miles traveled and emission factors from USEPA’s *MOBILE Model*.
- For non-road mobile source – USEPA’s *NONROAD Model*.
- For stationary area sources – State data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data were not submitted.

State and local environmental agencies supply most of the point source data. USEPA's Clean Air Market program supplies emissions data for electric power plants.

CUMULATIVE IMPACT COMPARISON

In order to evaluate the Range emissions and their impact to the overall ROI, which is defined as Walton County for this document's purposes, the emissions associated with the Range activities were compared to the total emissions on a pollutant-by-pollutant basis for the ROI's 2002 NEI data. Potential impacts to air quality are then identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10 percent criteria approach is used in the General Conformity Rule as an indicator for impact analysis for nonattainment and maintenance areas.

In accordance with Section 176(c) of the Clean Air Act, USEPA promulgated the General Conformity Rule that is codified at 40 CFR 51, Subpart W. The provisions of this rule apply to state review of all federal actions submitted pursuant to 40 CFR 51, Subpart W, and incorporated by reference at Rule 62-204.800, Florida Administrative Code. The conformity rule only affects federal actions occurring in nonattainment areas (areas that do not meet the NAAQS) and maintenance areas (areas that were classified as nonattainment but now are in attainment). Since the Proposed and Alternative Actions are located in attainment areas, Eglin AFB would not be required to prepare a conformity determination for the activities described. However, the general concept of the conformity rule was used as a criterion although not necessary.

For impacts screening in this analysis, however, a more restrictive criteria than required in the General Conformity Rule was used. Rather than comparing emissions from test activities to regional inventories (as required in the General Conformity Rule), emissions were compared to the individual counties potentially impacted, which is a smaller area.

National Emissions Inventory

The *National Emissions Inventory* (NEI) is operated under USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, from tribes, as well as from industry. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The NEI includes emission estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual points or major sources (facilities), as well as county level estimates for area, mobile, and other sources, are available currently for years 1996, 1999, and 2002 for criteria pollutants and HAPs.

Criteria air pollutants are those for which USEPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database.

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_x)

- Sulfur Dioxide (SO₂)
- Particulate Matter (PM₁₀ and PM_{2.5})

The NEI also includes emissions of Volatile Organic Compounds (VOCs), which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as other solvent uses. VOCs react with nitrogen oxides in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources.

- Point sources – Stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A “major” source emits a threshold amount (or more) of at least one criteria pollutant and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.
- Area sources – Small point sources such as a home or office building, or a diffuse stationary source, such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example (i.e., a single dry cleaner within an inventory area typically will not qualify as a point source, but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory).
- Mobile sources – Any kind of vehicle or equipment with a gasoline or diesel engine; airplane; or ship.

The main sources of criteria pollutant emissions data for the NEI are:

- For electric generating units – USEPA’s *Emission Tracking System/Continuous Emissions Monitoring Data (ETS/CEM)* and Department of Energy fuel use data.
- For other large stationary sources – State data and older inventories where state data was not submitted.
- For on-road mobile sources – The Federal Highway Administration’s (FHWA’s) estimate of vehicle miles traveled and emission factors from USEPA’s *MOBILE Model*.
- For Non-Road Mobile Sources – USEPA’s *NONROAD Model*.
- For Stationary Area Sources – State data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data was not submitted.

State and local environmental agencies supply most of the point source data. USEPA’s Clean Air Market program supplies emissions data for electric power plants.

REFERENCES

Florida Department of Environmental Protection (FDEP), 1996. FAC 62-204.240 (1)(a-b). Ambient Air Quality Standards. March.

Government Printing Office, no date, Code of Federal Regulations, Code of Federal Regulations, Title 40, Part 50 (40 CFR 50), www.access.gpo.gov/nara/cfr/cfr-retrieve.html#page1.

U.S. Environmental Protection Agency (USEPA), 1990. Draft New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Permitting. Office of Air Quality Planning and Standards, October.

U.S. Environmental Protection Agency (USEPA), 2003. Environmental Protection Agency, Office of Air Quality Planning Standards, *Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources*; retrieved from www.epa.gov/ttn/chief/ap42.html. December.

This page is intentionally blank.

APPENDIX G

CZMA DETERMINATION

**FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA)
CONSISTENCY DETERMINATION**

Introduction

This document provides the State of Florida with the U.S. Air Force's Consistency Determination under CZMA Section 307 and 15 C.F.R. Part 930 sub-part C. The information in this Consistency Determination is provided pursuant to 15 C.F.R. Section 930.39 and Section 307 of the Coastal Zone Management Act, 16 U.S.C. § 1456, as amended, and its implementing regulations at 15 C.F.R. Part 930.

This determination addresses the Proposed Action for the use of Interstitial Areas on Eglin Air Force Base (AFB), Florida (Figure 1).

Proposed Federal agency action:

The Interstitial Area Range Environmental Assessment (REA) encompasses all mission activities that occur in the interstitial area of the Eglin Military Complex (Figure 2). Eglin AFB previously performed environmental analysis on mission activities in the interstitial area in the *1998 Interstitial Programmatic Environmental Assessment* (PEA) (U.S. Air Force, 1998). Many of Eglin AFB's mission activities have changed since the original environmental analysis was done, requiring new environmental analysis to be performed.

The Region of Influence (ROI) for the interstitial area is defined as those areas within Eglin AFB's contiguous Range excluding the established test areas, two cantonment areas (Eglin Main Base, Hurlburt Field), Santa Rosa Island, Cape San Blas, Eglin Gulf Test and Training Range, and leased lands (e.g., Okaloosa County Fair Grounds and the Okaloosa County Correctional Institution). Certain areas were either included or excluded from the ROI because of their usage. Duke Field, Camp Rudder, and Choctaw Field were included because these areas are incorporated in a great deal of the training conducted in the interstitial area (see Appendix B of the Interstitial Areas REA for special considerations for these areas). Test Area (TA) D-84, otherwise referred to as the Fort Rucker Recreation Area, and TA A-85 (Wynn Haven Beach) were added to this document because they are used for ground training. Table 1 lists the areas included in and excluded from the ROI and Figure 2 shows the ROI. The interstitial area consists of approximately 385,000 acres of the Eglin Military Complex. The test areas comprise 50,000 acres and the cantonment areas comprise 28,000 acres of Eglin AFB's Reservation, which is approximately 463,000 total acres (Figure 1).

The interstitial area primarily supports ground operations and certain aspects of air operations. Air operations over the entire Eglin Military Complex are analyzed in a separate Range environmental assessment (U.S. Air Force, 1998b) and will not be covered here with the exception of zones within the interstitial area that support landing of aircraft and the impacts of chaff and flares that fall on the interstitial area. Ground operations typically include both ground testing and ground training. Ground testing does not typically occur within the interstitial area since testing operations occur exclusively on the test areas. However, any ground tests proposed to occur within the interstitial area would need to be reviewed on an individual per-case basis to

determine if a separate environmental analysis is required. Effectors utilized during ground training missions within the interstitial area include troop movement by foot and by vehicle, bivouac site use, assault zone use, small arms, pyrotechnics, smoke grenades, and chaff and flares. Any activities involving ground disturbance may be reviewed on an individual per-case basis.

Table 1. Regions of Eglin AFB Included and Excluded in the Interstitial Area ROI

| Included | Excluded |
|--|--|
| Areas Outside Active Test Areas | Active Test Areas (A-20, A-21, A-30, A-31, A-73, A-77, A-78, A-79, B-5, B-7, B-12, B-70 ^a , B-71, B-75, B-76, B-82, C-1, C-2, C-3, C-6, C-7, C-52, C-53, C-61, C-62, C-64, C-72, C-74, D-51, B-5 ALS, C-5 ALS, C-62 ALS, Aux Fld 1, Aux Fld 2, Aux Fld 7, Aux Fld 8, HLZ C-7, HLZ A-78) |
| Duke Field (Aux Field 3) | Santa Rosa Island (HLZ A-15, A-2, A-3, A-4, A-5, A-6, A-7, A-10, A-11, A-12, A-13, A-15, A-17) |
| Camp Rudder (Aux Field 6 on TA B-6) | Eglin Main Base (Eglin Main, A-19, A-22, A-24, A-28, A-112, A-113) |
| Choctaw/Dillon Field (Aux Field 10) | Hurlburt Field (Aux 9) |
| Auxiliary Field 1 on TA C-5 | Space Surveillance Area (C-6) |
| Auxiliary Field 4 on TA B-2 | Cape San Blas (D-3, D-3A, HLZ) |
| Auxiliary Field 5 on TA B-4 | Eglin Gulf Test and Training Range |
| Elizabeth Drop Zone on TA B-70 (DZ only) | Choctawhatchee Bay (D-54, D-55, D-59) |
| Fort Rucker Recreation Area (TA D-84) | Leased Properties and Special Use Areas |
| Wynn Haven Beach (TA A-85) | |
| LZ East, Rock Hill LZ | |

ALS = Assault Landing Strip; Aux Fld = Auxiliary Field; DZ = Drop Zone; HLZ = Helicopter Landing Zone; LZ = Landing Zone; TA = Test Area

a. B-70 is excluded from the analysis except the paratroop operations conducted on Elizabeth DZ and subsequent ranger training related to the paratroop operations.

The **Proposed Action** is for the Eglin AFB, 46th Test Wing Commander to establish a new authorized level of activity for the interstitial area that is based on an anticipated maximum usage. Demonstrating that the individual and cumulative effects of this usage level do not have significant environmental impact is the method for establishing the maximum threshold baseline. The environmental analysis is accomplished by evaluating the effect that the military mission activities and expendables have on Eglin AFB's natural, physical, and cultural environment.

Interstitial training operations may be broken down into three general categories:

- Ground Training - Includes dismounted maneuver and the firing of blank small-arms ammunition, blast simulators, hand-held flares, slap flares and smoke grenades. Some training includes wheeled vehicle support or maneuver on the existing road and trail network. It also includes establishment of bivouac sites (camping/overnight locations), which may include some limited ground-disturbing activities, and digging fighting positions.
- Landing Zones (LZs) - Includes landing zones, helicopter landing zones (HLZs), and parachute drop zones.
- Air Operations Countermeasures - Includes use of chaff, flares, signal, and smoke by military aircraft.

The interstitial area comprises 385,000 acres of varied habitat, including wetlands suitable for swamp training. Major user groups of the interstitial area in the baseline year were the U.S. Army Rangers, U.S. Army Special Forces, and U.S. Air Force 720th Special Tactics Group (STG) with associated squadrons aligned under them (such as U.S. Air Force 23rd Special Tactics Squadron (STS) and Advanced Skills Training (AST) which are stationed at Hurlburt Field). Figure 3 shows the interstitial training areas utilized by current and future user groups.

The **Proposed Action** (Preferred Alternative of the REA) would authorize the current level of activity, plus foreseeable future activities. Foreseeable future activities include:

- An increase in the U.S. Army 6th Ranger Training Battalion (6RTB) training
- Expansion of Alabama Army National Guard (ALARNG) training activities into the interstitial area
- Ground training activities associated with the establishment of the U.S. Army 7th Special Forces Group (Airborne), or 7SFG(A).

It would also authorize a 300 percent increase in mission activity with additional management actions imposed on interstitial activities. A 300 percent increase would occur for all types of interstitial activity, including troop movement on foot, troop movement by vehicle, bivouac use, and assault zone use, as well as the use of ordnance, pyrotechnics, smokes, chaff, and flares. A 300 percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency. The same areas will be used for training (Figure 4), so that acreage of interstitial areas will not increase; however, the frequency of use will increase.

Federal Review

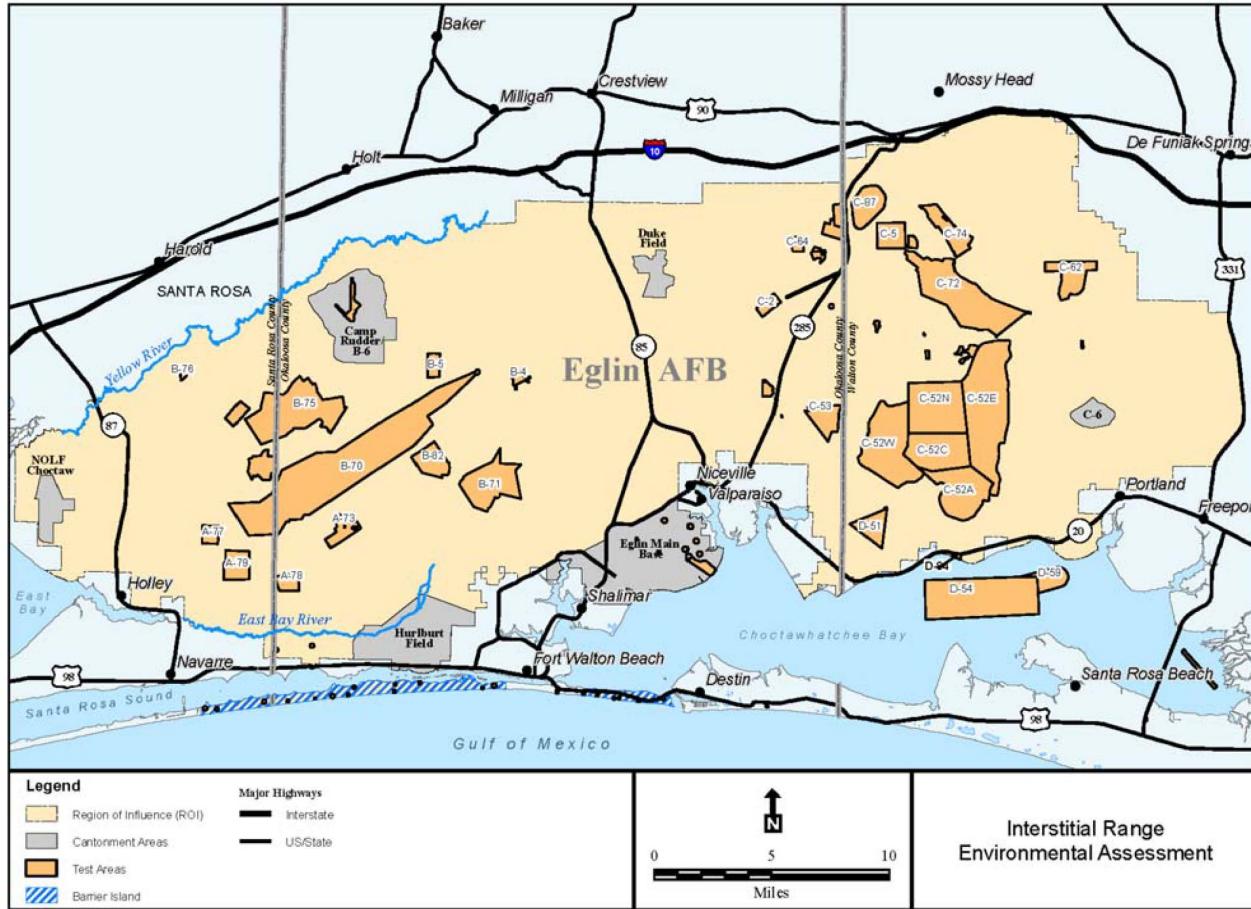
Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the proposed action are discussed in the following table.

Pursuant to 15 C.F.R. § 930.41, the Florida State Clearinghouse has 60 days from receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 C.F.R. § 930.41(b). Florida's concurrence will be presumed if Eglin AFB does not receive its response on the 60th day from receipt of this determination.



Figure 1. Regional Location of Eglin Air Force Base

Figure 2. Interstitial Area Region of Influence



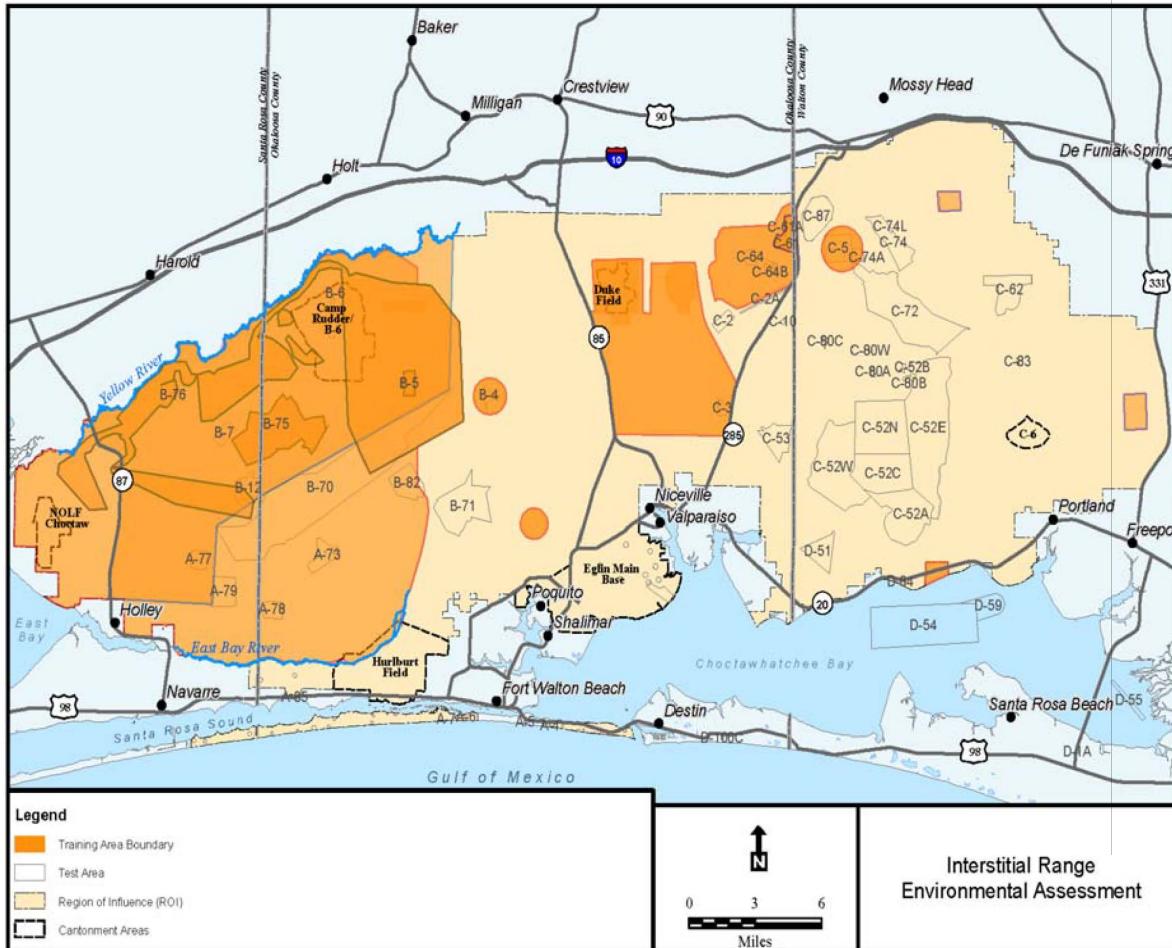


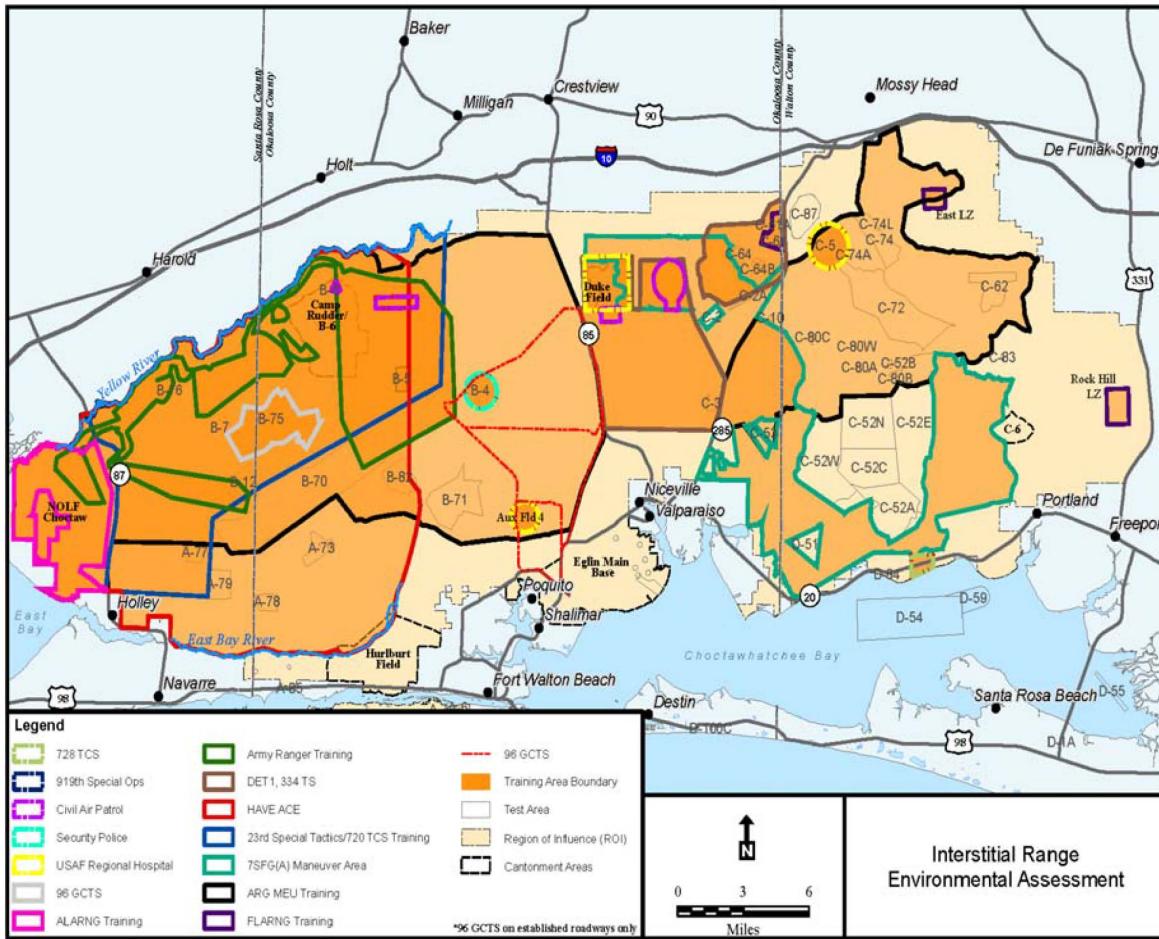
Figure 3. Intersitial Training Areas Utilized by Current and Future User Groups

Inter situ Air Range Environmental Assessment Eglin Air Force Base, Florida

Eglin Air Force Base, Florida

Page G-7

Figure 4. Interstitial Training Areas and Their Associated User Groups



Florida Coastal Management Program Consistency Review

| Statute | Consistency | Scope |
|---|--|---|
| <i>Chapter 161 Beach and Shore Preservation</i> | <p>The proposed action would not affect beach and shore management, specifically as it pertains to:</p> <ul style="list-style-type: none"> • The Coastal Construction Permit Program. • The Coastal Construction Control Line (CCCL) Permit Program. • The Coastal Zone Protection Program. <p>All land activities would occur on federal property.</p> | <p>Authorizes the Bureau of Beaches and Coastal Systems within DEP to regulate construction on or seaward of the states' beaches.</p> |
| <i>Chapter 163, Part II Growth Policy; County and Municipal Planning; Land Development Regulation</i> | <p>The proposed action would not affect local government comprehensive plans.</p> | <p>Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with the public interest.</p> |
| <i>Chapter 186 State and Regional Planning</i> | <p>The proposed action would not affect state plans for water use, land development or transportation.</p> | <p>Details state-level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.</p> |
| <i>Chapter 252 Emergency Management</i> | <p>The proposed action would not affect the state's vulnerability to natural disasters.</p> <p>The proposed action would not affect emergency response and evacuation procedures.</p> | <p>Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and manmade disasters.</p> |
| <i>Chapter 253 State Lands</i> | <p>All activities would occur on federal property; therefore the proposed action would not affect state or public lands.</p> | <p>Addresses the state's administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and</p> |

| | | |
|---|---|---|
| | | management of all state lands. |
| Chapter 258 <i>State Parks and Preserves</i> | The proposed action would not affect state parks, recreational areas and aquatic preserves. | Addresses administration and management of state parks and preserves (Chapter 258). |
| Chapter 259 <i>Land Acquisition for Conservation or Recreation</i> | The proposed action would not affect tourism and/or outdoor recreation. | Authorizes acquisition of environmentally endangered lands and outdoor recreation lands (Chapter 259). |
| Chapter 260 <i>Recreational Trails System</i> | The proposed action would not include the acquisition of land and would not affect the Greenways and Trails Program. | Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system (Chapter 260). |
| Chapter 375 <i>Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation</i> | The proposed action would not affect opportunities for recreation on state lands. | Develops comprehensive multipurpose outdoor recreation plan to document recreational supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs (Chapter 375). |
| Chapter 267 <i>Historical Resources</i> | Ground operations from current activities and foreseeable future actions have the potential to displace or destroy cultural resources. Interstitial training areas are currently being surveyed. Until this survey is complete and areas of avoidance are determined, consultation with the Base Historic Preservation Officer and Cultural Resources Branch (96 CEG/CEVH) must be undertaken to prevent adverse effects to cultural resources. All ground-disturbing activities, such as the establishment of fighting positions, should occur only in areas known to be devoid of cultural resources, or in areas cleared by data recovery | Addresses management and preservation of the state's archaeological and historical resources. |

| | | |
|---|---|---|
| | <p>excavations. In the event of unexpected discovery of cultural resources, all activity in the immediate vicinity must cease until the Base Historic Preservation Officer and Cultural Resources Branch (96 CEG/CEVH) have been notified and a determination of significance has been rendered.</p> <p>With the implementation of the management requirements discussed in Appendix B of the REA, impacts to cultural resources are not anticipated. Therefore, the proposed action would be consistent with the State's policies concerning historical resource management.</p> | |
| Chapter 288 <i>Commercial Development and Capital Improvements</i> | The proposed action would not affect future business opportunities on state lands, or the promotion of tourism in the region. | Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy. |
| Chapter 334 <i>Transportation Administration</i> | The proposed action would not affect transportation. | Addresses the state's policy concerning transportation administration (Chapter 334). |
| Chapter 339 <i>Transportation Finance and Planning</i> | The proposed action would not affect the finance and planning needs of the state's transportation system. | Addresses the finance and planning needs of the state's transportation system (Chapter 339). |
| Chapter 370 <i>Saltwater Fisheries</i> | The proposed action would not affect saltwater fisheries. | Addresses management and protection of the state's saltwater fisheries. |
| Chapter 372 <i>Wildlife</i> | Ground operations include troop movements, vehicle movements, bivouac/camping, and establishment of fighting positions. These activities have the potential to damage sensitive habitats and plants, and sensitive species may be injured, killed, startled, or | Addresses the management of the wildlife resources of the state. |

| | | |
|---|--|---|
| | <p>temporarily displaced by ground operations.</p> <p>Eglin Natural Resources Section has initiated consultation with the USFWS regarding federally protected species. Eglin NRS has determined that the proposed action “May Affect, but is Not Likely to Adversely Affect” these species based on the implementation of the management requirements discussed in Appendix B of the REA.</p> <p>Therefore, the proposed action would be consistent with the State’s policies concerning wildlife resource management.</p> | |
| <p><i>Chapter 373 Water Resources</i></p> | <p>The proposed activities may impact water resources; however, significant effects on water resources as a result of troop movement, assault zone use, or bivouac are not expected, assuming the management actions are implemented.</p> <p>Because it would be difficult to track and record details of all interstitial area missions, the Air Force has established management practices to minimize the impact of their actions to water resources. These measures are preventative in nature, and greatly decrease the likelihood for mission elements to directly affect water resources. These management practices, discussed in Appendix B of the REA, include buffers between the activity and the water resource, water use limits, prohibiting physical alterations to surface waters, resource avoidance and clean up.</p> <p>Eglin Water Resources (96)</p> | <p>Addresses the state’s policy concerning water resources.</p> |

| | | |
|--|---|--|
| | <p>CEG/CEVCE) would ensure that any applicable permitting requirements would be satisfied in accordance with Florida Administrative Code (FAC). Therefore, the proposed action would be consistent with the State's policies concerning water resource management.</p> | |
| Chapter 376 <i>Pollutant Discharge Prevention and Removal</i> | <p>Management actions would be in place (Appendix B) to assure training areas would be scanned for debris and that debris removed. The overall concentration of any chemical at any given location in the interstitial area would be minute. Additionally, lead expenditures already require Toxic Release Inventory-Data Deliver System reporting and no new TRI thresholds would be exceeded.</p> <p>The proposed action would be consistent with the State's policies concerning the transfer, storage, or transportation of pollutants.</p> | Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges. |
| Chapter 377 <i>Energy Resources</i> | The proposed action would not affect energy resource production, including oil and gas, and/or the transportation of oil and gas. | Addresses regulation, planning, and development of oil and gas resources of the state. |
| Chapter 380 <i>Land and Water Management</i> | The proposed action would not affect development of state lands with regional (i.e. more than one county) impacts. The proposed action would not include changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction. | Establishes land and water management policies to guide and coordinate local decisions relating to growth and development. |

| | | |
|---|---|--|
| Chapter 381 <i>Public Health, General Provisions</i> | The proposed action would not affect public health. | Establishes public policy concerning the state's public health system. |
| Chapter 388 <i>Mosquito Control</i> | The proposed action would not affect mosquito control efforts. | Addresses mosquito control effort in the state. |
| Chapter 403 <i>Environmental Control</i> | <p>Emissions from the increased activities are well within federal National Ambient Air Quality Standards. Therefore, no adverse impacts to regional air quality are expected from the proposed action.</p> <p>The proposed action would be consistent with the State's policies regarding water quality, air quality, pollution control, solid waste management, or other environmental control efforts.</p> | Establishes public policy concerning environmental control in the state. |
| Chapter 582 <i>Soil and Water Conservation</i> | <p>The proposed activities may impact soil and water conservation; however, significant effects as a result of troop movement, assault zone use, or bivouac are not expected, assuming the management actions are implemented.</p> <p>Established management practices, discussed in Appendix B of the REA, include buffers between the activity and the water resource, water use limits, prohibiting physical alterations to surface waters, including erosion into water bodies.</p> <p>Therefore, the proposed action would be consistent with the State's policies concerning soil and water conservation efforts.</p> | Provides for the control and prevention of soil erosion. |

This page is intentionally blank.

APPENDIX H

BIOLOGICAL ASSESSMENT

BIOLOGICAL ASSESSMENT



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 96TH AIR BASE WING (AFMC)
EGLIN AIR FORCE BASE FLORIDA

Mr. Stephen M. Seiber
Chief, Natural Resources Section
96 CEG/CEVSN
501 De Leon Street, Suite 101
Eglin AFB FL 32542-5133

AUG 11 2008

Ms. Janet Mizzi
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City FL 32405

Dear Ms. Mizzi:

The attached document is being submitted to fulfill requirements under Section 7 of the Endangered Species Act (ESA). This Biological Assessment (BA) addresses potential impacts to all federally listed threatened and endangered (T&E) species associated with interstitial area activities at Eglin Air Force Base (AFB), Florida. This letter and BA, conducted by Eglin's Natural Resources Section (NRS), is meant to initiate the consultation process with the United States (U.S.) Fish and Wildlife Service (USFWS) pursuant to Section 7 of the ESA.

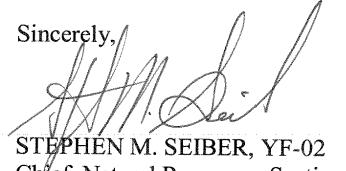
The BA is associated with the current level of interstitial training activity and foreseeable future activities at Eglin AFB, plus a 300-percent increase in mission activity. A 300-percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency. This increase would occur for all types of interstitial activities, including ground maneuvers, munitions and pyrotechnics use, and air operations. Foreseeable future activities include an increase in the U.S. Army 6th Ranger Training Battalion (6RTB) training, expansion of Alabama Army National Guard (ALARNG) training activities into the interstitial area, and ground training activities associated with the establishment of the U.S. Army 7th Special Forces Group (Airborne), or 7SFG(A). The combined training footprint for all user groups is 329,255 acres. Training in Eglin interstitial areas includes a number of activities, but generally it is the movement of dismounted soldiers through wooded interstitial areas.

The interstitial area comprises 385,000 acres of varied habitat, including wetlands suitable for swamp training. Major user groups of the interstitial area in the baseline year were the U.S. Army Rangers, U.S. Air Force HAVE ACE Special Forces, U.S. Air Force 23rd Special Tactics Squadron, and U.S. Air Force 720th Special Tactics Group. The Proposed Action is for the 46th Test Wing Commander to establish a new authorized level of activity for the interstitial area that is based on an anticipated maximum usage.

Based on analysis of the potential impacts to federally protected species associated with the project area, the NRS believes the interstitial training activities may affect, but are not likely to adversely affect any protected species. Avoidance and minimization measures will serve to mitigate potential impacts to sensitive species within interstitial areas.

If you have any questions regarding this letter or any of the proposed activities, please do not hesitate to contact either Mr. Bob Miller (850) 883-1153 or myself at (850) 882-8391.

Sincerely,



STEPHEN M. SEIBER, YF-02
Chief, Natural Resources Section

Attachments:

1. ITTR Biological Assessment

**EGLIN AIR FORCE BASE
Florida**

**U.S. FISH AND WILDLIFE
SERVICE**

**FINAL
INFORMAL ESA SECTION 7
CONSULTATION FOR
INTERSTITIAL AREA ACTIVITIES AT
EGLIN AFB, FL**



JULY 2008



PRINTED ON RECYCLED PAPER

TABLE OF CONTENTS

| | <u>Page</u> |
|---|-------------|
| List of Tables | ii |
| List of Figures..... | ii |
| Acronyms, Abbreviations, and Symbols..... | iii |
| 1. INTRODUCTION | 1-1 |
| 2. DESCRIPTION OF PROPOSED ACTION | 2-1 |
| 2.1 Ground Maneuvers | 2-6 |
| 2.2 Munitions and Pyrotechnics Use | 2-6 |
| 2.3 Air Operations | 2-6 |
| 3. BIOLOGICAL INFORMATION..... | 3-1 |
| 3.1 Federally Listed Species | 3-1 |
| 3.1.1 Okaloosa Darter..... | 3-1 |
| 3.1.2 Reticulated Flatwoods Salamander..... | 3-3 |
| 3.1.3 Red-cockaded Woodpecker | 3-3 |
| 3.1.4 Eastern Indigo Snake | 3-4 |
| 3.2 Other Species Considered | 3-6 |
| 3.2.1 Gopher Tortoise | 3-6 |
| 3.2.2 Florida Black Bear..... | 3-6 |
| 3.2.3 Florida Bog Frog | 3-6 |
| 3.2.4 Gopher Frog | 3-7 |
| 3.2.5 Pine Barrens Tree Frog..... | 3-7 |
| 3.2.6 Florida Pine Snake..... | 3-7 |
| 3.2.7 Southeastern American Kestrel..... | 3-7 |
| 3.2.8 Migratory Birds..... | 3-7 |
| 4. DETERMINATION OF IMPACTS..... | 4-1 |
| 4.1 Federally Listed Species | 4-2 |
| 4.1.1 Okaloosa Darter..... | 4-2 |
| 4.1.2 Reticulated Flatwoods Salamander..... | 4-2 |
| 4.1.3 Red-cockaded Woodpecker | 4-4 |
| 4.1.4 Eastern Indigo Snake | 4-9 |
| 4.1.5 Avoidance and Minimization Measures | 4-9 |
| 4.2 Other Species Considered | 4-16 |
| 4.2.1 Gopher Tortoise | 4-16 |
| 4.2.2 Florida Black Bear..... | 4-16 |
| 4.2.3 Florida Bog Frog | 4-17 |
| 4.2.4 Gopher Frog | 4-17 |
| 4.2.5 Pine Barrens Tree Frog..... | 4-17 |
| 4.2.6 Florida Pine Snake..... | 4-18 |
| 4.2.7 Southeastern American Kestrel | 4-18 |
| 4.2.8 Migratory Birds..... | 4-18 |
| 4.2.9 Avoidance and Minimization Measures | 4-19 |

TABLE OF CONTENTS, CONT'D

| | <u>Page</u> |
|---------------------|-------------|
| 5. CONCLUSION | 5-1 |
| 6. SIGNATURES | 6-1 |
| 7. REFERENCES | 7-1 |

LIST OF TABLES

| | <u>Page</u> |
|---|-------------|
| Table 2-1. Current Level of Interstitial Activity and Foreseeable Future Activities Plus a 300 Percent Mission Surge: Activities and Expendables..... | 2-4 |
| Table 4-1. Red-Cockaded Woodpecker Response to Vehicle Noise and Disturbance..... | 4-5 |
| Table 4-2. Wildfires From Military Missions on Eglin AFB From 2000 to 2007 | 4-7 |
| Table 4-3. Avoidance and Minimization Measures for Federally-listed T&E Species Affected by Interstitial Activities..... | 4-10 |
| Table 4-4. Selected Army Training Activities Allowed/Not Allowed Within 200 Feet of Marked RCW Cavity Tree..... | 4-15 |
| Table 4-5. Avoidance and Minimization Measures for State-listed T&E Species Affected by Interstitial Activities..... | 4-19 |
| Table 4-6. Cumulative Effects Determinations for Interstitial Activities | 4-23 |

LIST OF FIGURES

| | <u>Page</u> |
|--|-------------|
| Figure 2-1. Location of Eglin AFB | 2-3 |
| Figure 2-2. Location of Proposed Action..... | 2-5 |
| Figure 3-1. Sensitive Species (Other than RCW) in Eglin Interstitial Areas | 3-2 |
| Figure 3-2. Red-Cockaded Woodpecker Trees and Foraging Habitat in Eglin Interstitial Areas | 3-5 |

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

| | |
|-----------------|---|
| 6RTB | U.S. Army 6 th Ranger Training Battalion |
| 7SFG(A) | U.S. Army 7 th Special Forces Group (Airborne) |
| 720 STGP | 720 th Special Tactics Group |
| 728 TCS | 728 th Tactical Control Squadron |
| AFB | Air Force Base |
| AFSOC | Air Force Special Operations Command |
| ALARNG | Alabama Army National Guard |
| ARG/MEU | Amphibious Ready Group/Marine Expeditionary Unit |
| ATV | All-Terrain Vehicle |
| BA | Biological Assessment |
| cal | Caliber |
| DZ | Drop Zone |
| ESA | Endangered Species Act |
| FNAI | Florida Natural Areas Inventory |
| FWC | Florida Fish and Wildlife Conservation Commission |
| FLARNG | Florida Army National Guard |
| GIS | Geographic Information System |
| HAVE ACE | A subgroup of the U.S. Air Force Special Forces |
| HLZ | Helicopter Landing Zone |
| HMMWV | High Mobility Multipurpose Wheeled Vehicle |
| LZ | Landing Zone |
| mm | Millimeter |
| MRE | Meals-Ready-to-Eat |
| NLAA | Not Likely to Adversely Affect |
| NRS | Natural Resources Section |
| PBG | Potential Breeding Group |
| RCW | Red-cockaded Woodpecker |
| TAC | Tactical Air Command |
| T&E | Threatened and Endangered |
| TS | Training Squadron |
| U.S. | United States |
| USAF | U.S. Air Force |
| USFWS | U.S. Fish and Wildlife Service |

This page is intentionally blank.

Introduction**1. INTRODUCTION**

The following document is being submitted to fulfill requirements under Section 7 of the Endangered Species Act (ESA). This report addresses potential impacts to all federally-listed threatened and endangered (T&E) species and candidate species associated with interstitial area activities at Eglin Air Force Base (AFB), Florida. This biological assessment (BA), conducted by Eglin's Natural Resources Section (NRS), is meant to initiate the informal consultation process with the United States (U.S.) Fish and Wildlife Service (USFWS) pursuant to Section 7 of the ESA. The objectives of this BA are to:

- Document all federally listed T&E species and associated habitat that occur, or may potentially occur, on Eglin AFB near the proposed action.
- Identify the activities that have the potential to impact, either beneficially or adversely, those documented species.
- Determine and quantify to the extent possible what effects these activities will most likely have on federally listed species.

Introduction

This page is intentionally blank.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

1-2

Description of Proposed Action**2. DESCRIPTION OF PROPOSED ACTION**

The Proposed Action is to authorize the current level of interstitial training activity and foreseeable future activities at Eglin AFB (Figure 2-1), plus a 300-percent increase in mission activity (Table 2-1). A 300-percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency. This increase would occur for all types of interstitial activities, including ground maneuvers, munitions and pyrotechnics use, and air operations. Foreseeable future activities include:

- An increase in the U.S. Army 6th Ranger Training Battalion (6RTB) training
- Expansion of Alabama Army National Guard (ALARNG) training activities into the interstitial area
- Ground training activities associated with the establishment of the U.S. Army 7th Special Forces Group (Airborne), or 7SFG(A).

Currently, 14 user groups have directives that include ground training in the interstitial area; establishment of the 7SFG(A) at Eglin will result in a total of 15 interstitial user groups (Table 2-1; Figure 2-2). The combined training footprint for all user groups is 329,255 acres. Training in Eglin interstitial areas includes a number of activities, but generally it is the movement of dismounted soldiers through wooded interstitial areas. During typical ground training operations, students are formed into small units and conduct infiltration, raid, surveillance, and ambush missions through different portions of the Eglin interstitial area. Aircraft, watercraft, and ground support vehicles are often integrated into the training to deliver and retrieve the participating troops or provide support and logistics. Training is conducted under realistic conditions that train students to infiltrate undetected and operate behind enemy lines for extended periods of time. Blank small arms ammunition, hand flares, smoke grenades, or other training ammunition are expended during certain operations.

General descriptions for the interstitial area training activities are below (Sections 2.1, 2.2, and 2.3). Detailed information on the types of training conducted by each current user group is available in the *Interstitial Area Environmental Baseline Document* (U.S. Air Force, 2005) and *ARG/MEU Readiness Training Final Environmental Assessment* (U.S. Air Force, 2003). Future ALARNG activities were analyzed in the *Alabama Army National Guard Implementation of a Portion of the Master Plan for Cobb Training Site Final Environmental Assessment* (U.S. Air Force, 2007), and 7SFG(A) activities are analyzed in the *Proposed Implementation of the 2005 BRAC Decisions and Related Action at Eglin AFB Draft Environmental Impact Statement*, which was released to the public in March 2008. Riverine and estuarine movements are covered in the *Estuarine and Riverine Programmatic Environmental Assessment* (U.S. Air Force, 2004), and activities on Santa Rosa Island are covered in the *Santa Rosa Island Programmatic Environmental Assessment*.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

2-1

Description of Proposed Action

(U.S. Air Force, 2005a). Cape San Blas interstitial activities are analyzed in the *Cape San Blas Environmental Baseline Document, Revision 1* (U.S. Air Force, 2005b) and the *Eglin AFB Beach Management Plan* (U.S. Air Force, 2006).

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

2-2

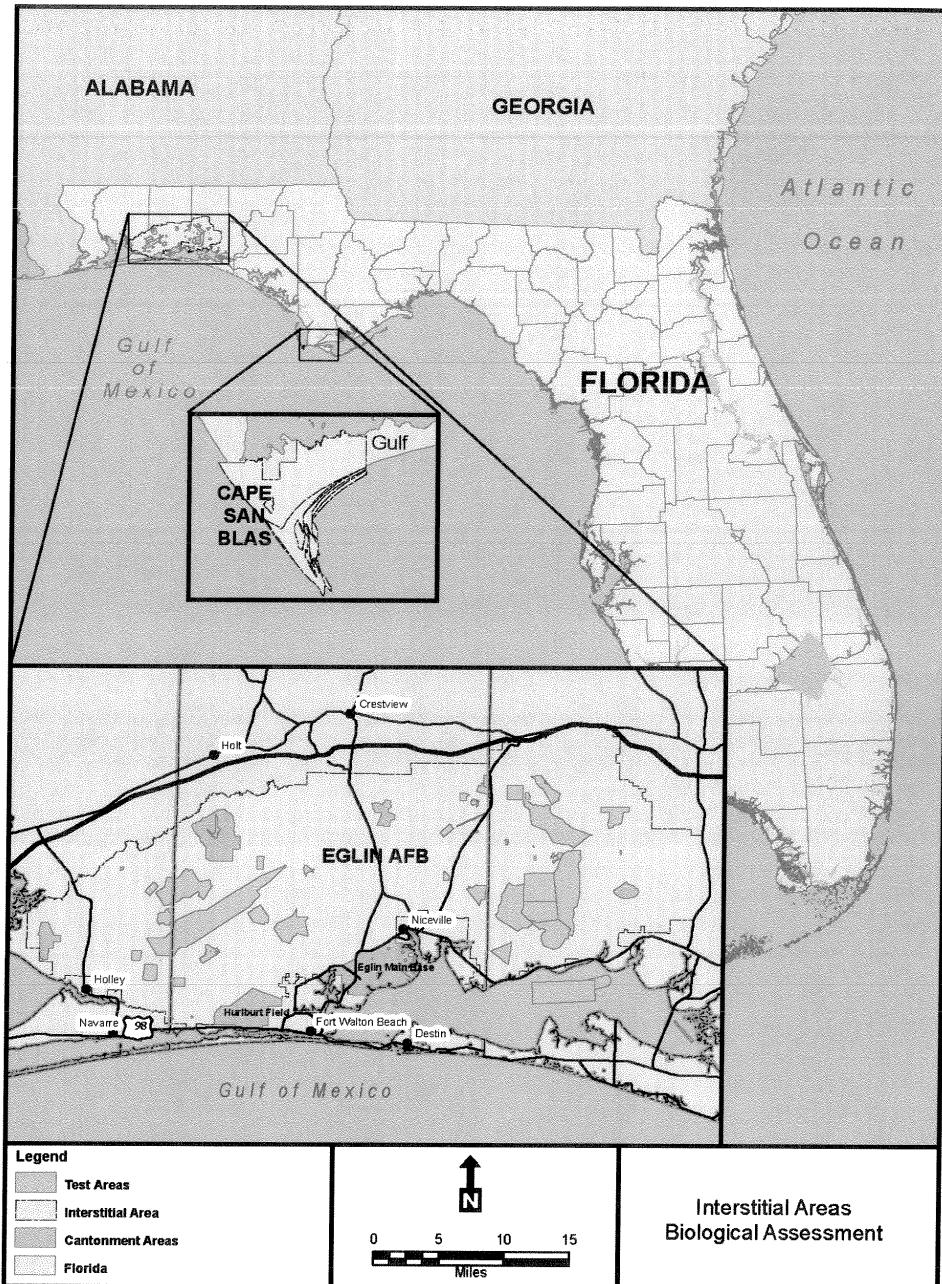
Description of Proposed Action

Figure 2-1. Location of Eglin AFB

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

2-3

Description of Proposed Action**Table 2-1. Current Level of Interstitial Activity and Foreseeable Future Activities Plus a 300 Percent Mission Surge: Activities and Expendables**

| Activity Title | Troop Movement on Foot ¹ | Troop Movement by Vehicle | Bivouac Use ² | | | | Assault Zone Use ³ | | | Ordnance | | | | | | |
|---|-------------------------------------|----------------------------|--------------------------|---|---|---|-------------------------------|----|----|-------------------|------------------|----------------|-------------------------|---------------|---------------|--|
| | | | A | B | C | D | HLZ | DZ | LZ | 5.56 Blank | 7.62 Blank | .50 Cal Blank | Simulators ⁴ | Smokes | Flares | |
| User Groups | | | | | | | | | | | | | | | | |
| U.S. Army Ranger Training | 223,740 | on-road | X | X | | | X | X | X | 9,514,560 | 3,396,800 | 0 | 53,420 | 10,912 | 11,164 | |
| U.S. AFSC HAVE ACE | 6,240 | on-road | X | | | | X | X | | 224,000 | 112,000 | 0 | 5,600 | 3,140 | 5,600 | |
| FLANG 3d Battalion 124th Infantry Training | 3,360 | on-road | X | X | | | X | | | 84,000 | 42,000 | 3,400 | 196 | 240 | 600 | |
| U.S. AFSC 23d Special Tactics Student Squadron Training Support | 12,800 | on/off-road (ATVs) | X | | | | X | X | X | 216,000 | 108,000 | 0 | 1,000 | 1,024 | 112 | |
| USAF SOC Security Police Training | 1,000 | on-road | | | X | X | X | | X | 52,320 | 12,000 | 8,000 | 888 | 888 | 392 | |
| USAF 919th Special Operations Wing Readiness Field Training | 5,120 | on-road | | | X | X | X | X | X | 20,000 | 16,000 | 0 | 320 | 200 | 0 | |
| USAF Regional Hospital/Eglin | 5,600 | on-road | | | X | X | X | | X | 0 | 0 | 0 | 0 | 0 | 0 | |
| Civil Air Patrol Search and Rescue Training | 960 | on-road | | | X | X | | X | | 0 | 0 | 0 | 0 | 0 | 0 | |
| Det 1, 334 TS - TAC Tech School | 10,000 | on-road | | X | | | | | | 40,000 | 20,000 | 0 | 1,600 | 400 | 1,000 | |
| 720 STGP Joint Training Support | 12,800 | on-road | X | | | X | | X | X | 16,000 | 8,000 | 0 | 0 | 420 | 0 | |
| 728 TCS Scheduling Support | 38,400 | on-road | | | X | | | | | 96,000 | 28,000 | 0 | 0 | 0 | 0 | |
| 96th Ground Combat Training Squadron | | on-road | | | | | | | | 168,000 | 48,000 | 0 | 960 | 960 | 0 | |
| Navy Expeditionary Warfare Training Sup (ARG/MEU) | 40,000 | on/off-road | | X | X | | X | X | X | 2,766,480 | 1,096,384 | 0 | 12,040 | 4,908 | 1,992 | |
| ALARNG Training | 331,200 | on/off-road (up to 200 ft) | | | | | | | | 320,000 | 216,000 | 160,000 | 2,000 | 2,000 | 2,000 | |
| 7SFC(A) Training | 995,328 | on/off-road | X | X | X | X | X | X | | 4,101,120 | 437,760 | 0 | 45,600 | 20,664 | 9,600 | |
| TOTAL | 1,686,548 | | | | | | | | | 17,618,480 | 5,520,944 | 171,400 | 123,624 | 45,756 | 32,460 | |

1. People-days/year = # personnel × # days of the deployment × the number of deployments/year; the maximum number of personnel, number of days in the field, and deployments per year were used.

2. A = No Bivouac; B = Primitive; C = Temporary Tent Complex; and D = Reusable Hardstand

3. HLZ = Helicopter Landing Zone; DZ = Drop Zone; and LZ = Landing Zone

4. Includes ground burst simulators, artillery simulators, hand grenade simulators, demolition effect simulators, etc.

04/22/08

Final Interstitial Area Range Environmental Ass

Page H-15

Description of Proposed Action

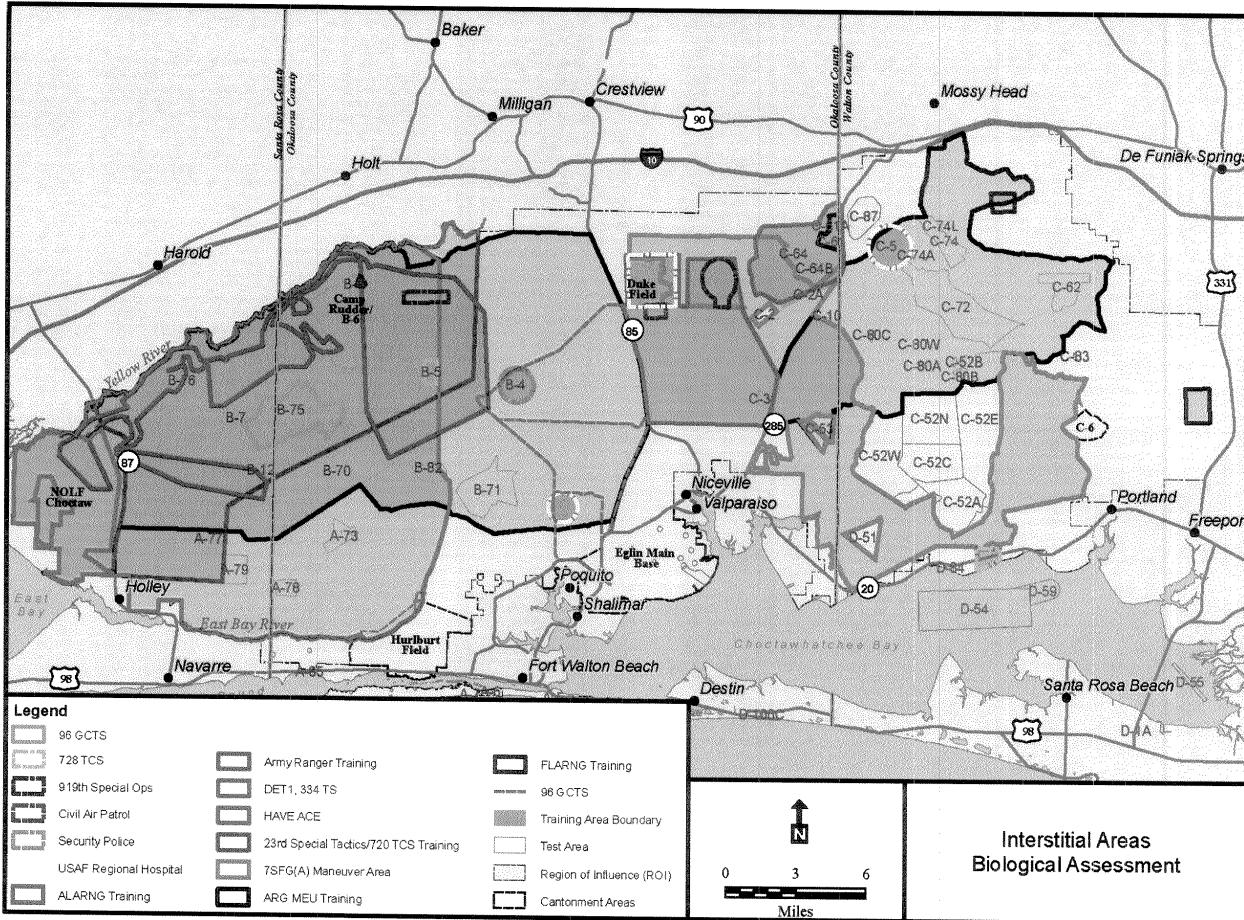


Figure 2-2. Location of Proposed Action

July 2008

**Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida**

2-5

Description of Proposed Action**2.1 GROUND MANEUVERS**

Ground maneuvers include troop movement on foot, troop movement by vehicle, and bivouac, and may occur during daytime or nighttime (Table 2-1). During ground maneuver training, troops conduct activities such as reconnaissance, surveillance, land navigation, visibility training, convoy training, and so on. Troop movements are typically stealthy as units transit from one objective to another. Personnel movement may occur on established roads, along or across streams, through cleared areas, wooded areas, and on rare occasions through swamp environments.

Ground support vehicles are sometimes integrated into the training to deliver and retrieve the participating troops or provide support and logistics. Vehicle movement is normally restricted to the existing road and trail network, but some training integrates the use of all-terrain vehicles (ATVs) or trucks. The largest vehicle that may traverse off road is a High Mobility Multipurpose Wheeled Vehicle (HMMWV) (1/4 ton truck). This vehicle comes in varying sizes and can accomplish an array of diverse tasks. The vehicles would not traverse in wetlands or swamps. Tasks that may require leaving existing roads include setting up remote communication relay sites. Often, this requires one to two vehicles traveling to a known point for limited mission-specific activity. Other tasks include "Zone Recce" where a series of vehicles may temporarily conceal themselves off the existing travel routes for a short period. Small ATVs may also be utilized and in most cases would support establishment of drop zones (DZs), and helicopter landing zones (HLZs), and occasional insertion to a remote area for other on-foot activities.

Ground training also includes the establishment of bivouac, ranging from primitive, leave-no-trace bivouac to established hardstand sites with water and electricity hookups. Rations are Meals Ready to Eat (MREs) 90 percent of the time. Larger units may set up a kitchen at an auxiliary field to occasionally provide warm rations. Food waste and other trash are bagged and transported to dumpsters on Eglin Main Base for disposal. Portalets are used at all bivouac areas.

2.2 MUNITIONS AND PYROTECHNICS USE

To increase the realism of the training events, some blank small arms ammunition, hand flares, smoke grenades, simulators, or other training ammunition are expended during certain operations (Table 2-1). During interstitial operations, troops use only blank munitions.

2.3 AIR OPERATIONS

Airborne operations include the use of rotary or fixed-wing aircraft for the insertion, movement, or supplying of ground troops at landing zones (LZs), HLZs, and DZs

Description of Proposed Action

(Table 2-1). These zones are established for user groups that conduct training and testing that integrate ground and air operations. Landing zones are used for touchdown and takeoff of fixed-wing and rotary military aircraft. HLZs are established for the landing and takeoff of military helicopters. HLZs may be improved surfaces such as concrete or asphalt; however, the majority of HLZs on the Eglin Reservation are cleared, grassy areas. DZs are areas for inserting paratroops (personnel who jump from aircraft and descend by parachute) or paratrooping equipment or palletized supplies using parachutes.

During air operation training, chaff, flares, signals, and smokes may be expended in and over the interstitial area. Military aircraft utilize chaff and flares as defensive mechanisms to avoid detection and/or attack by adversary air defense systems. Chaff consists of aluminum-coated glass fibers that, when released from aircraft, form an electromagnetic equivalent of a visual smoke screen. Protection flares generate heat (about 2,000 degrees Fahrenheit) to attract and defeat heat-seeking missiles. Illumination flares, which are used for target identification or search and rescue, have longer burn times than protection flares.

Description of Proposed Action

JSF Program Proposed Action

This page is intentionally blank.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

2-8

Biological Information**Federally Listed Species****3. BIOLOGICAL INFORMATION**

Four federally listed T&E species occur within the interstitial project area (Section 3.1). Multiple state-listed species also are located in the project area (Section 3.2). Impacts from military operations on Gulf sturgeon and sturgeon critical habitat are analyzed in the *Estuarine and Riverine Programmatic Biological Assessment* (U.S. Air Force, 2004a), and the perforate lichen, piping plover, and sea turtles are covered in the *Santa Rosa Island Programmatic Biological Assessment* (U.S. Air Force, 2005c). The following list indicates those federally listed species considered for this action:

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Federal Status</u> |
|----------------------------------|----------------------------------|-----------------------|
| Okaloosa Darter | <i>Etheostoma okaloosae</i> | Endangered |
| Reticulated Flatwoods Salamander | <i>Ambystoma bishopi</i> | Endangered (Proposed) |
| Red-cockaded Woodpecker (RCW) | <i>Picoides borealis</i> | Endangered |
| Eastern Indigo Snake | <i>Drymarchon corais couperi</i> | Threatened |

3.1 FEDERALLY LISTED SPECIES**3.1.1 Okaloosa Darter**

The Okaloosa darter (*Etheostoma okaloosae*) is a small federally and state-listed endangered fish. Spawning occurs from March to October, with the greatest amount of activity taking place during April (USFWS, 1998). The entire global population of this species is found in the tributaries and main channels of Toms, Turkey, Mill, Swift, East Turkey, and Rocky Creeks, which drain into two bayous of Choctawhatchee Bay (Figure 3-1). These seepage streams have persistent discharge of clear, sand-filtered water through sandy channels, woody debris, and vegetation beds. The Eglin Range contains 90 percent of the 457-square-kilometer (176-square-mile) drainage area. The remaining portions of the watershed are within the urban areas of Niceville and Valparaiso (U.S. Air Force, 2006a).

Due to a recovery plan that Eglin AFB implemented for the Okaloosa darter in 1998, the darter is currently under federal status review for potential downlisting from endangered to threatened. To ensure down-listing of the Okaloosa darter, Eglin AFB is protecting instream flows and historical habitat through management plans, conservation agreements, easements, and/or acquisitions; is implementing an effective habitat restoration program to control erosion from roads, clay pits, and open ranges; is demonstrating that the Okaloosa darter population is stable or increasing and that the range of the Okaloosa darter has not decreased at all historical monitoring sites; and is seeing that no foreseeable threats exist that would impact the survival of the species. The Eglin NRS is about 95 percent complete with erosion control projects in darter watersheds and will soon be entering the maintenance phase (U.S. Air Force, 2006a).

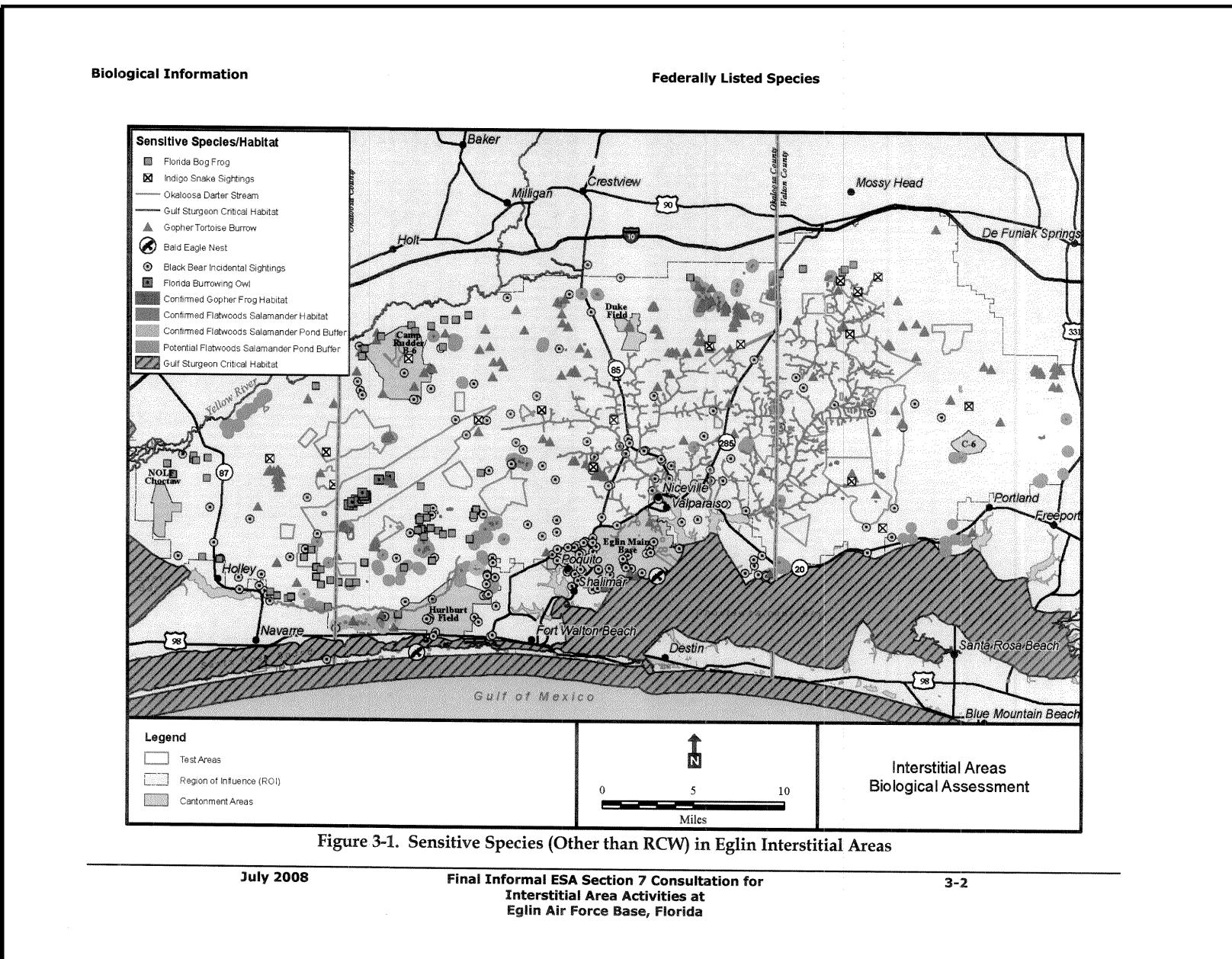


Figure 3-1. Sensitive Species (Other than RCW) in Eglin Interstitial Areas

| Biological Information | Federally Listed Species |
|------------------------|--------------------------|
|------------------------|--------------------------|

3.1.2 Reticulated Flatwoods Salamander

The reticulated flatwoods salamander is proposed for listing as federally endangered and is a state species of special concern. The draft proposed rule to list the reticulated flatwoods salamander is due in August 2008, with the final ruling to be completed by January 2009. Based on molecular and morphological analyses, Pauly et al. (2007) proposed the separation of the flatwoods salamander into two species. The division lies along the Apalachicola-Flint Rivers with reticulated flatwoods salamanders (*Ambystoma bishopi*) inhabiting areas to the west and frosted flatwoods salamanders (*A. cingulatum*) ranging to the east of the rivers. Optimal habitat for this small mole salamander is open, mesic (moderately wet) woodlands of longleaf or slash pine flatwoods maintained by frequent fires and that contain shallow, ephemeral wetland ponds. Males and females migrate to these ephemeral ponds during the cool, rainy months of October through December. The females lay their eggs in vegetation at the edges of the ponds. Flatwoods salamanders may disperse long distances from breeding sites to upland sites where they live as adults (U.S. Air Force, 2006a).

There are 18 known breeding ponds for the flatwoods salamander on the Eglin Range, and approximately 17,000 acres of potential salamander habitat in mesic flatwoods (Figure 3-1). Flatwoods salamanders and their active breeding wetlands both appear to have declined in number since the original Eglin surveys in 1993 and 1994. This is possibly due in part to several years of drought in the late 1990s and early 2000s. Breeding wetlands may not have remained wet long enough for larvae to complete metamorphosis if rainfall amounts were not sufficient. This has resulted in little population recruitment over the last decade at Eglin's wetlands (U.S. Air Force, 2006a).

The USFWS guidelines in the *Federal Register*, dated 01 April 1999, establish a 450-meter (1,476-foot) buffer area from the wetland edge of confirmed breeding ponds. Within the buffer area, the guidelines restrict ground-disturbing activities in order to minimize the potential for direct physical impacts to salamanders, the introduction and spread of invasive non-native plant species, and alterations to hydrology and water quality.

3.1.3 Red-cockaded Woodpecker

The red-cockaded woodpecker (RCW) (*Picoides borealis*) is listed as a federally endangered bird species and a state species of special concern. The RCW excavates cavities in live longleaf pine trees that are at least 85 years old. The RCW historically had a habitat range as far north as New Jersey and as far west as Oklahoma. Today, the RCW has been restricted to the southeastern United States, from Florida to Virginia and to southeast Texas, due to a loss of habitat. In the southeast, 98 percent of the longleaf pine forests have been removed, making relatively undeveloped federal lands such as Eglin AFB primary habitat for the species. Due to the preservation of continuous longleaf pine forests on Eglin, the Eglin Range has one of the largest remaining

| Biological Information | Federally Listed Species |
|------------------------|--------------------------|
|------------------------|--------------------------|

populations of RCWs in the country (Figure 3-2). In 2003, the USFWS identified Eglin AFB as 1 of 13 primary core populations for the RCW (U.S. Air Force, 2006a). The Eglin population goal is 350 Potential Breeding Groups (PBGs). The number of PBGs at Eglin has been increasing since 1994, with the current population at 366 active clusters and an estimated 317 PBGs.

The Eglin NRS geographic information system (GIS) database includes the locations of active RCW cavity trees (tree containing one or more cavities that are utilized by the RCW) and inactive RCW cavity trees (tree containing cavities that were once utilized by the RCW but have not shown recent activity). Inactive RCW cavities are spatially recorded. The NRS also maps RCW foraging habitat around active clusters of RCW cavities in the GIS. Consultation guidelines require that military training within 200 feet of marked cavity trees be limited to military activities of a transient nature (less than two hours occupation), and military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road or maintained trail or firebreak. Prohibited activities within the 200-foot buffer include bivouacking, excavating, digging, and establishing command posts. In addition, if timber is to be removed within 0.5 mile of active cavity trees, then a forage habitat analysis must be completed to determine potential impacts. Consultation is required if resulting resources fall below USFWS guidelines.

3.1.4 Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) is listed as a federal and state threatened species that is the largest nonvenomous snake in North America. The primary reason for its listing is population decline resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats exposes the snake to danger from increased contact with humans. Indigo snakes frequently utilize gopher tortoise burrows and the burrows of other species for over-wintering. The snake frequents flatwoods, hammocks, stream bottoms, riparian thickets, and high ground with well-drained, sandy soils. The indigo snake could occur anywhere on the Eglin Range because it uses such a wide variety of habitats (U.S. Air Force, 2006a).

The species is extremely uncommon on the Eglin Range with the sighting of only 29 indigo snakes throughout the Eglin Range from 1956 to 1999, and no reported sightings since 1999 (Gault, 2006) (Figure 3-1). Most of these snakes were seen crossing roads or after being killed by vehicles. It is difficult to determine a precise number or even estimate of the number of these snakes due to the secretive nature of this species (U.S. Air Force, 2006a).

Biological Information

Federally Listed Species

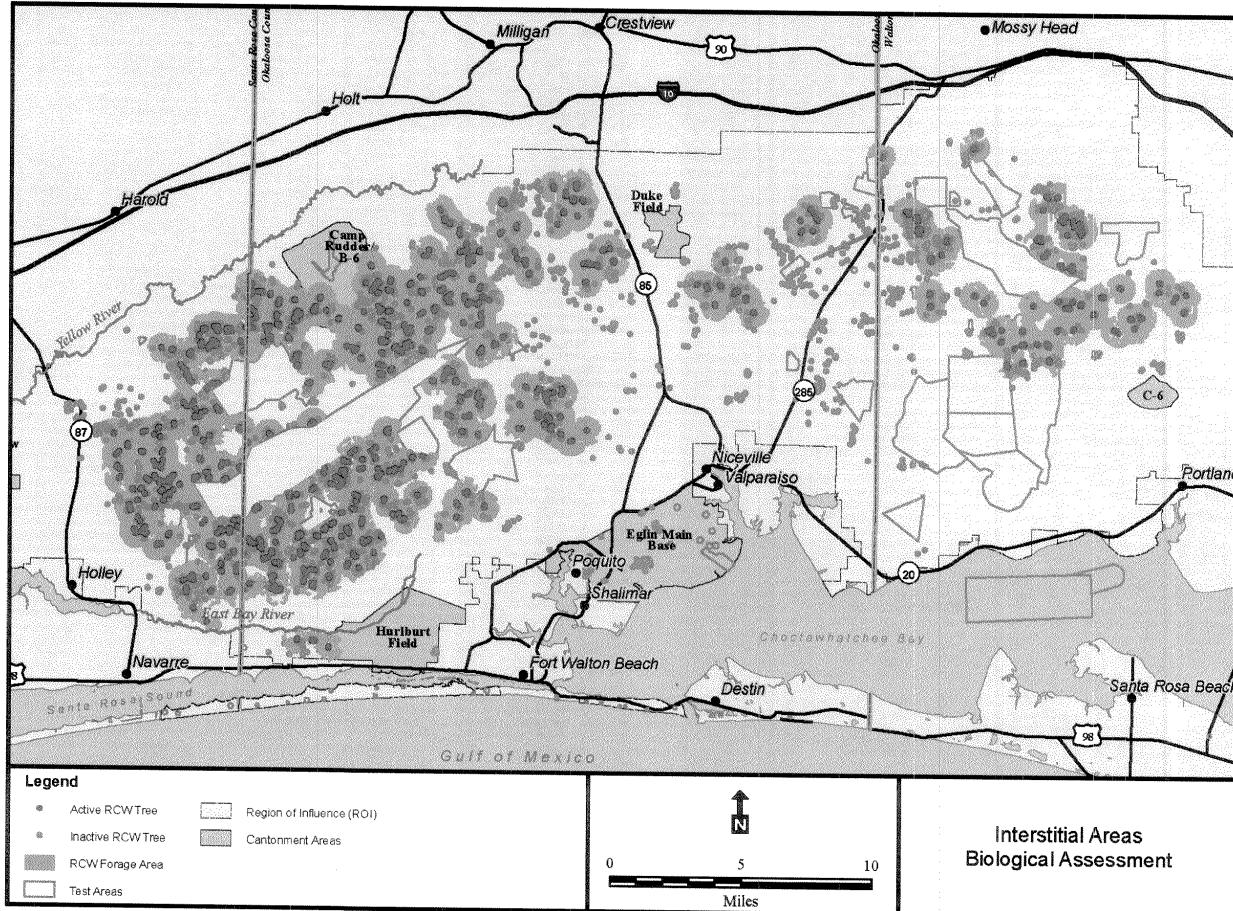


Figure 3-2. Red-Cockaded Woodpecker Trees and Foraging Habitat in Eglin Interstitial Areas

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

3-5

Biological Information**Other Species Considered****3.2 OTHER SPECIES CONSIDERED****3.2.1 Gopher Tortoise**

The gopher tortoise (*Gopherus polyphemus*) is a state threatened species. The tortoise is found primarily within the sandhills and open grassland ecological associations on the Eglin Range, where it excavates a tunnel-like burrow for shelter from climatic extremes and refuge from predators (Figure 3-1). The primary features of good tortoise habitat are sandy soils, open canopy with plenty of sunlight, and abundant food plants (forbs and grasses). Prescribed fire is often employed to maintain these conditions. Nesting occurs during May and June and hatching occurs from August through September. Gopher tortoise burrows serve as important habitat for many species, including the federally listed eastern indigo snake (U.S. Air Force, 2006a).

A Candidate Conservation Agreement for the gopher tortoise has been developed as a cooperative effort among state, federal, non-governmental, and private organizations. The purpose of this Agreement is to collectively implement proactive gopher tortoise conservation measures across its eastern range. This agreement will be made final by the end of 2008.

3.2.2 Florida Black Bear

The Florida black bear (*Ursus americanus floridanus*) is currently listed as a state threatened species except in Baker and Columbia Counties and in Apalachicola National Forest. Florida black bear populations are currently found in Florida and Georgia, and there is also a small population in Alabama. Eglin AFB has the smallest population, with an estimated 60 to 100 individuals; however, Eglin's black bear population has shown signs of increase since the early 1990s (Figure 3-1). Reasons for population declines include loss of habitat due to urban development and direct mortality due to collisions with vehicles. Black bear in Florida breed in June-July, and young are born in January-February. Most black bears within the Eglin Range utilize the large swamps and floodplain forests in the southwest and northern portions of the Eglin Range, where they feed on fruits, acorns, beetles, and yellow jackets. Black bear sightings have occurred at numerous locations throughout the Eglin Range, the majority of which have been within the interstitial areas (U.S. Air Force, 2006a).

3.2.3 Florida Bog Frog

The Florida bog frog (*Rana okaloosae*) a species of special concern by the state, can only be found within Walton, Okaloosa, and Santa Rosa Counties. Most of the habitat for the frog lies on Eglin AFB property with all known locations of the frog in small tributary streams of the Yellow, Shoal, and East Bay Rivers (Figure 3-1). There are 65 documented bog frog locations on the Eglin Range, but only 58 of those have been verified (U.S. Air Force, 2006a).

| Biological Information | Other Species Considered |
|------------------------|--------------------------|
|------------------------|--------------------------|

3.2.4 Gopher Frog

The gopher frog (*Rana capito*), a state species of concern, is associated with gopher tortoise habitat, as it uses gopher tortoise burrows for cover, but is also known to flourish where tortoises no longer occur. It also uses old field mouse burrows, hollow stumps, and other holes for cover. The species requires nearby seasonally flooded grassy ponds, depression marshes, or Sandhills upland lakes that lack fish populations, found within the Sandhills ecological association, for breeding. They have been found in the longleaf pine, turkey oak, pine flatwood, sand pine scrub, and xeric hammock open or forested communities of the Sandhills and Open Grassland/ Shrubland ecological associations up to two kilometers from the breeding ponds. Eglin supports the largest known concentration of reproductive sites of the gopher frog subspecies anywhere within its range (Florida Natural Areas Inventory [FNAI], 1993) (Figure 3-1).

3.2.5 Pine Barrens Tree Frog

The pine barrens tree frog (*Hyla andersonii*), a state species of concern, is a small (approximately 13-mm [1.5-inch]) lime-green frog with a maroon/brown stripe on its sides and a white belly. It is typically found in herbaceous and shrubby bogs of the Wetland/Riparian ecological association, near clear, shallow water along the Blackwater and Yellow Rivers and Choctawhatchee Bay. Breeding occurs between March and September, with tadpoles emerging between May and August. Stream and water quality degradation and hardwood forest encroachment are the main threats to this species (FNAI, 2001).

3.2.6 Florida Pine Snake

The Florida pine snake (*Pituophis melanoleucus mugitus*), a state species of concern, inhabits dry areas such as the longleaf pine, oak woodlands, and sand pine scrub communities found within the Sandhills ecological association. The species is physically adapted for digging into loosely packed sand. It also enters into rodent burrows and occasionally into gopher tortoise burrows.

3.2.7 Southeastern American Kestrel

The southeastern American kestrel (*Falco sparverius paulus*), a state threatened species, is a common permanent resident of Eglin. This small raptor typically preys on small rodents, reptiles, and insects in clearings or woodland edges. The species can be found within the sandhills and open grassland/shrubland areas of Eglin, and may occur on or near any of the test areas at Eglin.

3.2.8 Migratory Birds

Migratory birds pass through the Florida Panhandle, but Eglin is not considered an important stopover area or concentration site for neotropical migratory birds in the

Biological Information**Other Species Considered**

spring or fall (Tucker et al., 1996). Breeding neotropical migrants at Eglin are primarily found in riparian, hammock, and barrier island habitats. These areas can serve as temporary habitat for neotropical birds migrating to and from the Caribbean and South and Central America. Neotropical migrants are more common within the area during fall migration than spring migration (Tucker et al., 1996).

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

3-8

Determination of Impacts**4. DETERMINATION OF IMPACTS**

Based on the scope of the Proposed Action, as described above, potential impacts to sensitive species from interstitial activities (ground maneuvering, munitions use, pyrotechnics use, and air operations,) can be categorized as follows:

- Direct Physical Impacts – Physical harm (i.e., injury or mortality) to listed species as a result of human activities. The main cause of direct physical impacts associated with the Proposed Action is physical contact, which could involve the crushing/trampling of, or collision with, a species due to vehicle traffic, watercraft use, or human movements resulting in physical damage or mortality of a species. Chemicals may also cause direct physical impacts.
- Harassment – Actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Activities under the Proposed Action may result in harassment due to the following:
 - Foraging/nesting disturbance – Disruption of normal breeding/nesting or foraging activity.
 - Nest/burrow destruction – Destruction of a nest or burrow due to excessive ground disturbance, causing a species to relocate.
- Habitat Impacts – Habitat impacts include loss, alteration, and/or degradation of habitat. These impacts characterize the physical damage, stress, or disruptions that may adversely alter or degrade the habitats essential to the sustainment of a species. A habitat in this instance refers to the ecological and geomorphological components, such as vegetation, soil, topography, and water that support listed species. Activities under the Proposed Action may result in habitat impacts due to the following:
 - Soil erosion – Loss of soil due to vehicular traffic, human movements, or other activities that involve the destruction or removal of vegetative ground cover occurring in or near sensitive species habitat resulting in habitat loss, alteration, or degradation.
 - Sensitive habitat destruction – Destruction or degradation of sensitive habitats such as wetland areas or foraging habitat resulting from human activities (i.e., driving, fire suppression, etc.) having a negative impact.

| Determination of Impacts | Federally Listed Species |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

4.1 FEDERALLY LISTED SPECIES

This section discusses potential impacts to federally listed species from activities conducted in the interstitial areas of Eglin AFB. Analysis focuses on assessing the potential for impacts from ground operations, pyrotechnics and munitions use, and air operations (i.e., landing zones) in interstitial areas, and on identifying methods to reduce the potential for negative impacts to listed species from these activities.

4.1.1 Okaloosa Darter

Excess sedimentation is the major threat to stream habitats of the federally endangered Okaloosa darter; therefore, minimization of erosion in Okaloosa darter watersheds is extremely important. To reduce the possibility of increased erosion in Okaloosa darter watersheds, Eglin will restrict digging, bivouac, vegetation cutting, off-road vehicle use, and other ground-disturbing activities within 200 feet of darter streams. Additionally, vehicles must remain on existing trails, roads, and bridges when crossing darter streams. Okaloosa darter streams will be marked on field maps.

Pyrotechnics and munitions have the potential to impact Okaloosa darter health if accumulated in the water. Because aquatic species are particularly susceptible to chemical impacts from pyrotechnics, Eglin will restrict their use within 100 feet of water bodies and direct that they are never to be thrown directly into a water body. To protect water quality, Eglin will restrict the release of chemicals or metals into streams and the release of toxic aerosols within 300 feet of streams. Cleanup procedures will require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after a training mission has been completed. Post-mission site surveys will ensure debris has been removed.

With the restrictions on pyrotechnics, munitions, vehicle use and other ground-disturbing activities (Table 4-3) near Okaloosa darter streams, the Proposed Action may affect, but is **not likely to adversely affect the Okaloosa darter**.

4.1.2 Reticulated Flatwoods Salamander

Troop movements may affect hydrology and sediment levels in flatwoods salamander habitat. The flatwoods salamander is thought to be sensitive to activities disturbing soil and groundcover within its terrestrial habitat, especially when the disturbance creates an impediment to or alteration of the ephemeral wetlands it uses to breed. Soil and vegetation disturbance results in changes to the natural flow and deposition of water, which in turn affects the length of time a pond may hold water (hydroperiod) and the extent to which ponds are filled. These alterations of hydroperiod have a great potential to interrupt the normal breeding cycle of the flatwoods salamander.

| Determination of Impacts | Federally Listed Species |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

Eglin has both potential and confirmed habitat for the federally listed flatwoods salamander. Potential habitat includes areas that meet the criteria necessary for flatwoods salamanders to survive, but have not yet had a confirmed sighting of a salamander. Confirmed habitat includes sites where salamanders have been documented. Troops and vehicles may pass through areas with confirmed habitat, but no off-road activities will occur. The interstitial training footprint does include 34 ponds that are considered potential habitat. Potential and confirmed habitat will be treated with the same protection. To minimize impacts to salamander habitat, Eglin will restrict digging, vegetation cutting, off-road vehicle use, and other ground-disturbing activities within 1,500 feet of flatwoods salamander ponds, both confirmed and potential. Vehicle traffic will be restricted to established roads in these areas.

Munitions and pyrotechnics use may impact the flatwoods salamander from chemical impacts and wildfires started by pyrotechnics. Because aquatic species are particularly susceptible to chemical impacts, Eglin will restrict the release of chemicals or metals within the 1,500-foot buffer for flatwoods salamander ponds. Cleanup procedures will require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after a training mission has been completed. Post-mission site surveys will ensure debris has been removed.

The increase in munitions and pyrotechnics use will increase the number of wildfire starts on Eglin AFB. Fires are usually beneficial in restoring natural communities, but it is unknown whether the wildfires potentially associated with the Proposed Action will have a net positive or negative effect on the flatwoods salamander. The flatwoods salamander requires frequent fire to keep scrubby vegetation to a minimum. Wildfires may achieve this purpose, but with every wildfire, there is the potential for the alteration of the hydrology of salamander habitat from fire suppression activities. Each interstitial user group that conducts activities that may ignite wildfires will work with the NRS to develop a Wildfire Operational Plan to identify high wildfire risk conditions and notification procedures for units to follow to engage fire response personnel when needed. Munitions and pyrotechnics use will follow Eglin's *Wildfire Specific Action Guide Restrictions*, which rate fire danger from low to extreme (U.S. Air Force, 2006b). During days with low fire danger, there are no restrictions on missions, but on days with extreme fire danger, no pyrotechnics are allowed without prior approval from the Wildland Fire Program Manager at Eglin's Natural Resources Section. Ground disturbing fire suppression activities (bulldozers) in flatwoods salamander habitat will be avoided if possible.

With the restrictions on pyrotechnics, munitions, vehicle use and other ground-disturbing activities within potential and confirmed flatwoods salamander habitat, (Table 4-3), the Proposed Action may affect, but **is not likely to adversely affect the flatwoods salamander**.

| Determination of Impacts | Federally Listed Species |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

4.1.3 Red-cockaded Woodpecker

The Proposed Action may result in impacts from chemicals, noise, human presence, and habitat alteration. Within the training footprint there are 1,189 active RCW trees (Figure 3-2). The following sections analyze each of these impacts, and provide avoidance and minimization measures to reduce or remove impacts.

Direct Physical Impacts

Chemical residue from small-arms blanks, flares, ground burst simulators, and smokes has the potential to impact RCW health if ingested or accumulated in soils and water. Chemicals can interfere with respiration, reproduction, nervous system functions, and other physiological functions. Only blank rounds are used in interstitial areas; therefore direct hits from munitions are not a concern, and are not discussed further.

Potential effects on wildlife from the use of flares are inhalation of flare ash and ingestion of or contact with the chemical constituents of flares. The toxic effects of flare ash residue were tested on mammals, plants, and fish, with concentrations of flare ash representing the high range that would be found in a pyrotechnic test area. Results indicated that the effects of flare ash residue are very minimal and not particularly dangerous to the environment (U.S. Air Force, 1997). Furthermore, the chemical constituents of flares are not of sufficient quantities to change soil, water, or air chemistry. None of the threatened or endangered species are known to be especially sensitive to the chemical constituents of flares.

Wildlife could be potentially exposed to dye-colored smoke through inhalation, ingestion, direct contact, or bioconcentration. The most likely opportunity for such exposure would be immediately after the smoke has been dispelled, but since wildlife would most likely leave the area during training exercises, the likelihood of direct exposure to toxic levels of emissions would be low. Ingestion or inhalation of particles in sufficient amounts to cause harm is unlikely because of the wind-driven distribution of smoke particles. Additionally, the Army guidelines (U.S. Army, 2006) restrict the use of most smokes near active RCW trees. Cleanup procedures require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after a training mission has been completed. Post-mission site surveys will ensure debris has been removed.

Due to restrictions on where pyrotechnics and munitions can be used, along with required cartridge and debris cleanup (Table 4-3), chemicals associated with munitions and pyrotechnics are not likely to adversely affect the RCW.

Noise and Human Presence

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

4-4

| Determination of Impacts | Federally Listed Species |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

RCWs may be affected by noise and human presence associated with interstitial activities. Indirect impacts to RCWs could occur from the physical presence of personnel or equipment within foraging habitat, or from noise associated with munitions, vehicle, or aircraft use. Impacts could include changes in nesting behavior and feeding.

Ground Operations

Vehicle movement and foot traffic would potentially create noise and disturbance that could affect the federally endangered RCW. Depending on the type of vehicle, noise levels could be quite loud and accompanied by heavy vibration. Delaney et al. (2002) monitored nesting RCWs as a convoy of vehicles passed (Table 4-1). Birds flew away as a result of the passing of the convoy, but returned shortly thereafter. Vehicle use associated with the Proposed Action along existing roadways does not represent a novel noise or disturbance source such that birds would abandon the area. Birds near these areas are likely acclimated to the presence of vehicles.

Table 4-1. Red-Cockaded Woodpecker Response to Vehicle Noise and Disturbance

| Noise Source | Noise Level (SEL) | Distance (meters) | Notes |
|---|-------------------|-------------------|--|
| Vehicles (convoy of Bradley fighting vehicles and civilian vehicle) | <75 | >50 | Bird returned 10 minutes after convoy had passed. Birds returned after 3 minutes when civilian vehicle had passed. |

SEL = sound exposure level

Eglin follows the *Management Guidelines for the Red-Cockaded Woodpecker on Army Installations* (U.S. Army, 2006), which details allowed and restricted activities near active RCW trees (Table 4-4). Military training within 200 feet of marked cavity trees is limited to military activities of a transient nature (less than two hours of occupation). Military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road, maintained trail, or firebreak. Activities that are not allowed within the 200-foot buffer include bivouacking and establishing command posts. U.S. Army (2006) provides a detailed description of management requirements with respect to training near RCWs. According to this document there is an incremental relaxation of these training restrictions as the population moves towards its recovery goal. Eglin will follow the formula for removal of restrictions as outlined in this document. This includes the complete removal of training restrictions after the population recovery goal is reached.

In accordance with the Army guidelines discussed above, transient foot and vehicle traffic will be limited to two hours or less, vehicles will use established trails and roads,

| Determination of Impacts | Federally Listed Species |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

and no bivouacking will occur within the 200-foot RCW buffer for protected clusters. Therefore, RCWs are not likely to be adversely affected by noise associated with ground movements.

Munitions Use

Noise impacts to the federally endangered RCW are possible from munitions use. Delaney et al. (2002) found that military training exercises of short duration (less than 2 hours) conducted near active RCW cavity trees would not significantly affect the ability of the individuals to successfully reproduce. In accordance with the Army guidelines (U.S. Army, 2006), Eglin's Natural Resources Section requires that training within 200 feet of active RCW trees be of a transient nature (no longer than 2 hours). Also, only blank munitions will be used in interstitial areas. Under the Army guidelines, blank munitions use is allowed within the 200 foot buffer (U.S. Army, 2006). Therefore, with the implementation of the Army guidelines (as described in Table 4-4), noise from munitions use associated with blank fire in interstitial areas is not likely to adversely affect the RCW.

Air Operations

Noise from aircraft associated with the LZs and DZs may affect RCWs in the area. The type of noise produced from aircraft engaged in paratroop and equipment drops does not represent a new or novel source of disturbance on Eglin. Currently, helicopters and fixed-wing aircraft utilize virtually all of the airspace above the Reservation, and numerous LZs are located throughout these areas. While some temporary disturbance is possible as a result of helicopter flights near RCWs, the quality of habitat seems to override any such negative effects such that the RCW is maintaining a stable population on Eglin. As a precautionary measure, Eglin requires a minimum radius of 500 feet from RCW cavity trees for HLZs. Given the 500-foot buffer around HLZs for RCW trees, air operations are not likely to adversely affect the RCW.

Habitat Impacts

Interstitial training activities have the potential to cause soil and vegetation disturbance during ground operations and to increase the frequency of wildfires due to pyrotechnics use. For protected clusters Eglin will follow Army guidelines on activities that are restricted within 200 feet of RCWs, including bivouacking, excavating, digging, and establishing command posts (U.S. Army, 2006). Units must immediately report to Range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; Range control will notify Natural Resources Section biologists immediately. Within 3 working days of notification, the Eglin Natural Resources Section will re-provision a cavity tree if one is destroyed due to training activity. All digging for military training activities in RCW

Determination of Impacts**Federally Listed Species**

habitat management units must be filled and inspected upon completion of training. If a unit causes damage to training land within a cluster, the responsible unit must coordinate with the Natural Resources Section to repair damage as soon as practicable (normally within 3 working days of notification). U.S. Army (2006) provides a detailed description of management requirements with respect to training near RCWs.

The use of pyrotechnics increases the risk of wildfires, potentially causing damage to RCW cavity trees if they burn too hot or smolder. The RCW requires frequent fire to keep scrubby vegetation to a minimum, and wildfires may achieve this purpose. However, with every wildfire, there is the potential for damage or mortality of active RCW cavity trees if the trees ignite and damage to understory vegetation from fire suppression activities (i.e., bulldozers). Prescribed fire is the preferred option for maintaining these habitats, and will continue to be a priority in RCW foraging habitat.

Over the past eight years (2000-2007), 57,424 acres have burned from wildfires started by military mission activities. The primary interstitial user group that causes wildfires is the Army Rangers (Table 4-2). Based on the average number of wildfires resulting from Army Ranger training, it was assumed that approximately 12 wildfires affecting 920 acres would occur annually under current usage levels by interstitial user groups. Because the primary ignition source from interstitial training is pyrotechnics, the increase in pyrotechnic use was utilized as a predictor for the likely increase in wildfires. Approval of a 300 percent increase over the current usage level plus foreseeable future activities would result in a 1,900 percent increase in pyrotechnics use in interstitial areas, with an accompanying increase in wildfire potential. Although a 1,900 percent increase in pyrotechnics use would not necessarily translate into a 1,900 percent increase in wildfires, for the purposes of comparison, this assumption was made for analyses; the resulting increase in wildfires would be 240 wildfires affecting 22,080 acres annually.

Table 4-2. Wildfires From Military Missions on Eglin AFB From 2000 to 2007

| Cause | Metric | YEAR | | | | | | |
|-------------------|-------------------|-------|-------|--------|-------|-------|-------|-------|
| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2007 |
| Air Force mission | Number of Fires | 36 | 46 | 48 | 49 | 41 | 47 | 75 |
| | Acres Burned | 2,933 | 9,599 | 10,408 | 6,798 | 2,411 | 3,065 | 6,892 |
| | Average Size (ac) | 81 | 209 | 217 | 139 | 59 | 65 | 92 |
| Army mission | Number of Fires | 18 | 14 | 12 | 6 | 6 | 7 | 25 |
| | Acres Burned | 1,975 | 637 | 216 | 1,335 | 44 | 201 | 2,955 |
| | Average Size (ac) | 110 | 45 | 18 | 223 | 7 | 29 | 118 |
| Other missions | Number of Fires | 0 | 0 | 0 | 5 | 5 | 0 | 5 |
| | Acres Burned | 0 | 0 | 0 | 203 | 2,111 | 0 | 198 |
| | Average Size (ac) | 0 | 0 | 0 | 41 | 422 | 0 | 40 |

Source: Eglin DSS, 2008

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

4-7

| Determination of Impacts | Federally Listed Species |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

Each user group must develop a Wildfire Operational Plan in cooperation with the Natural Resources Section to identify high wildfire risk conditions and notification procedures that units will follow to engage fire response personnel when needed. To minimize wildfire potential, user groups will follow Eglin's *Wildfire Specific Action Guide Restrictions*, which rate fire danger from low to extreme (U.S. Air Force, 2006b). During days with low fire danger, there are no restrictions on missions, but on days with extreme fire danger, no pyrotechnics are allowed without prior approval from the Wildland Fire Program Manager at Eglin's Natural Resources Section. Even with observance of these restrictions, some wildfires will occur. The increase in wildfires will require additional firefighting personnel and resources. Section 12.5.13.2 of AFI 32-7064, *Integrated Natural Resources Management*, states that the user group responsible for the increase in wildland fires is responsible for providing the additional funding required. User groups will need to work with and support the Eglin Natural Resources Section to ensure that sufficient resources (i.e., fire management personnel and equipment) are available to respond to fire emergencies.

Monitoring of RCWs in training areas will continue such that any changes in these clusters will be detected and appropriately addressed. Within 3 working days of notification, the Eglin NRS will re-provision a cavity tree if one is destroyed due to training activity (i.e., due to wildfire).

Observance of the Army guidelines for RCWs (U.S. Army, 2006) will minimize the potential for negative impact to RCW foraging habitat. Negative and beneficial impacts to RCWs from wildfires associated with pyrotechnics use are possible; however, with the implementation of avoidance and minimization measures (Table 4-3), wildfires are not likely to adversely affect the RCW.

Summary

The Proposed Action has the potential to impact the RCW from chemical impacts, noise and human presence (ground operations, munitions use, and air operations), and habitat impacts (soil/vegetation disturbance and wildfires). Cumulatively, these stressors have the potential to negatively affect certain RCW clusters. To minimize potential impacts, interstitial user groups will follow the *Management Guidelines for RCWs on Army Installations* (U.S. Army, 2006) and implement additional avoidance and minimization measures (Table 4-3 and 4-4).

Eglin will implement Avoidance and Minimization Measures (Table 4-3 and Table 4-4). Interstitial activities may affect, but are **not likely to adversely affect the RCW**.

Determination of Impacts**Federally Listed Species****4.1.4 Eastern Indigo Snake**

Incidental contact with vehicles and troops on foot could result in trampling or crushing of federally threatened eastern indigo snakes, but this occurrence is unlikely, as the snake would most likely move away from the area if it sensed a general disturbance in its vicinity. Additionally, the eastern indigo snake is extremely uncommon on Eglin, with no sightings reported since 1999, thus an encounter is unlikely. However, as a precaution, Eglin will require that all units be informed that if an eastern indigo snake is sighted, personnel must allow the snake to leave the area undisturbed and immediately report the sighting to the Natural Resources Section.

Chemical residue from small-arms blanks, flares, ground burst simulators, and smokes has the potential to impact indigo snake health if ingested or accumulated in soils and water. Chemicals can interfere with respiration, reproduction, nervous system functions, and other physiological functions. To minimize exposure, Eglin will require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after an interstitial training mission has been completed. Post-mission site surveys will ensure debris has been removed.

With avoidance measures and required debris cleanup (Table 4-3), interstitial activities may affect, but are not likely to adversely affect the Eastern indigo snake.

4.1.5 Avoidance and Minimization Measures

Interstitial user groups, Eglin NRS, and Eglin AFB will implement the Avoidance and Minimization Measures below to reduce or remove impacts to federally listed species from interstitial activities.

D**etermination of Impacts****Federally Listed Species****Table 4-3. Avoidance and Minimization Measures for Federally-listed T&E Species Affected by Interstitial Activities**

| Activity | Avoidance and Minimization Measures | Okaloosa Darter | Flatwoods Salamander | RCW | Indigo Snake |
|------------------|---|-----------------|----------------------|-----|--------------|
| Ground Maneuvers | Wheeled vehicles must remain on existing trails/roads (except for the 23 Special Tactics Squadron (23 STS), 7SFG(A), ARG/MEU, and ALARNG, which have been approved for off-road vehicle use). | √ | √ | √ | √ |
| | For permitted off-road vehicle use, vehicles must avoid driving in wetlands, floodplains, and on steep slopes. | √ | √ | | |
| | Use established roads, trails, and bridges when troops and vehicles are crossing Okaloosa darter streams. | √ | | | |
| | Use established roads when vehicles are moving through potential and confirmed flatwoods salamander habitat. | | √ | | |
| | Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams. | √ | | | |
| | Digging, vegetation cutting, off-road vehicle use, bivouac, and other ground-disturbing activities will not occur within 1,500 feet of flatwoods salamander ponds or 200 feet of Okaloosa darter streams. | √ | √ | | |
| | For activities that require digging, such as the establishment of fighting positions, troops shall fill in holes once they are finished and cover them with pine straw or leaves to minimize erosion potential. | √ | √ | √ | √ |
| | Do not withdraw water from Okaloosa darter streams. | √ | | | |
| | Do not alter stream flow. | √ | | | |
| | Mark sensitive species habitat on field maps. | √ | √ | √ | |
| Other Activities | Continue prescribed burning as much as possible, especially in RCW foraging habitat and flatwoods salamander habitat. | | √ | √ | √ |
| | Continue monitoring of RCWs by the Eglin NRS. | | | √ | |

Determination of Impacts **Federally Listed Species**

| Activity | Avoidance and Minimization Measures | Okaloosa Darter | Flatwoods Salamander | RCW | Indigo Snake |
|----------|---|-----------------|----------------------|-----|--------------|
| | Report unmarked RCW cavity trees to the Natural Resources Section. | | | ✓ | |
| | Follow the <i>Management Guidelines for the Red-Cockaded Woodpecker on Army Installations</i> , which details activities that are allowed and those that are restricted near active RCW trees (U.S. Army, 2006) (Table 4-4). | | | ✓ | |
| | For protected clusters in areas of the Eglin reservation where ground training will occur, mark buffers for all suitable cavity and cavity start trees prior to mission initiation. Warning signs will be posted at reasonable intervals along the 200-foot perimeter of cavity trees facing to the outside of the buffer zone and along roads, maintained trails and firebreaks, and other likely entry points into the buffer zone. | | | ✓ | |
| | Within 200 feet of marked RCW cavity trees, allow only military activities of a transient nature (less than two hours occupation). | | | ✓ | |
| | Within the 200 foot RCW buffer, prohibit bivouacking, excavating, digging, and establishing command posts. | | | ✓ | |
| | Prohibit military vehicles from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road or maintained trail or firebreak. | | | ✓ | |
| | Immediately report to range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; range control will notify NRS biologists immediately. | | | ✓ | |
| | Within 3 working days of notification, the Eglin NRS will re-provision a cavity tree if one is destroyed due to training activity. | | | ✓ | |
| | If a unit causes damage to training land within a cluster, the responsible unit will coordinate with the NRS to repair damage as soon as practicable (normally within 3 working days of notification). | | | ✓ | |

Determination of Impacts **Federally Listed Species**

| Activity | Avoidance and Minimization Measures | Okaloosa Darter | Flatwoods Salamander | RCW | Indigo Snake |
|----------|---|-----------------|----------------------|-----|--------------|
| | All digging for military training activities in RCW habitat management units must be filled and inspected upon completion of training. | | | ✓ | |
| | In areas where the use of prescribed fire may be limited, herbicides or mechanical means may be used to maintain RCW foraging habitat. | | | ✓ | |
| | Tree cutting is limited to sand pine, live oak (for tree thinning only), and scrub oak. Longleaf pine trees may not be cut down for any reason, unless written permission has been granted by the NRS. | ✓ | ✓ | ✓ | ✓ |
| | Troops shall be alert to the potential presence of indigo snakes in training areas. If an indigo snake is encountered, allow the snake to leave the area undisturbed. Report all sightings of indigo snakes to the Natural Resources Section. | | | | ✓ |
| | Direct personnel not to injure, harm, or kill the indigo snake. | | | | ✓ |
| | Follow the <i>Standard Protection Measures for the Eastern Indigo Snake</i> (U.S. Air Force, 2004b). | | | | ✓ |
| | All out-of-area equipment must be inspected prior to deployment in the field. Vehicles and equipment must be cleaned in accordance with Armed Forces Pest Management Board Technical Guide No. 31 Retrograde Washdowns: Cleaning and Inspection Procedures (http://www.afpmb.org/pubs/tims/tg31/tg31.pdf), prior to being used on Eglin AFB. | ✓ | ✓ | ✓ | ✓ |
| | To reduce potential seed sources, treat areas with known invasive non-native species problems. | ✓ | ✓ | ✓ | ✓ |
| | To avoid spreading invasive non-native plant species, do not drive vehicles in areas with known invasive non-native plant species problems. If a vehicle is driven in such an infested area, clean the vehicle before it is driven to a non-infested area. | | ✓ | ✓ | ✓ |

Determination of Impacts **Federally Listed Species**

| Activity | Avoidance and Minimization Measures | Okaloosa Darter | Flatwoods Salamander | RCW | Indigo Snake |
|----------------------------|--|-----------------|----------------------|-----|--------------|
| | Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary. | √ | √ | √ | √ |
| Munitions and Pyrotechnics | Avoid pyrotechnics and munitions use in water bodies. | √ | √ | | |
| | User groups must pick up munitions cartridges and debris from ground burst simulators, flares, and smokes after the training mission has been completed. | √ | √ | √ | √ |
| | Conduct post-mission site surveys to ensure debris has been removed. | √ | √ | √ | √ |
| | Do not use smokes, simulators, flares, and other pyrotechnics within 100 feet of water bodies and never be throw them directly into a water body. | √ | √ | | |
| | Do not directly release chemicals or metals into the streams, or release toxic aerosols within 300 feet of streams or within 1,500 feet of flatwoods salamander ponds. Additionally, no chemicals or metals will be released in wind speeds greater than 10 knots. | √ | √ | | |
| | Follow Eglin Wildfire Specific Action Guide Restrictions (U.S. Air Force, 2006b). | √ | √ | √ | √ |
| | Develop wildfire operational plans with Eglin NRS to identify high wildfire risk conditions and notification procedures that units will follow to engage fire response personnel when needed. | √ | √ | √ | √ |
| | Immediately notify Eglin Fire Department Dispatch of any wildfire started as a result of pyrotechnics use. | √ | √ | √ | √ |
| | Provide additional wildland fire resources at Eglin. | √ | √ | √ | √ |
| | Avoid ground disturbing fire suppression activities (bulldozers) in flatwoods salamander habitat and near Okaloosa darter streams. | √ | √ | | |
| | Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary. | √ | √ | √ | √ |

July 2008

Final Informal ESA Section 7 Consultation for
 Interstitial Area Activities at
 Eglin Air Force Base, Florida

4-13

Determination of Impacts **Federally Listed Species**

| Activity | Avoidance and Minimization Measures | Okaloosa Darter | Flatwoods Salamander | RCW | Indigo Snake |
|----------------|---|-----------------|----------------------|-----|--------------|
| Air Operations | Helicopter landing zones must be at least 500 feet from active RCW trees. | | | ✓ | |
| | To ensure complete flare burnout prior to reaching the surface, release flares at a minimum altitude of 500 feet above ground level when not over authorized test areas. | ✓ | ✓ | ✓ | ✓ |
| | Do not use flares for air operations when surface winds exceed 15 knots or when the fire danger level prohibits use of flares. | ✓ | ✓ | ✓ | ✓ |
| | Do not locate any new LZs or DZs in wet habitats, particularly those supporting rare species (i.e., flatwoods salamander, Okaloosa darter). When possible, discontinue use of LZs and DZs in these wet areas. | ✓ | ✓ | | |
| | Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary. | ✓ | ✓ | ✓ | ✓ |

AFB = Air Force Base; DZ = Drop Zone; LZ = Landing Zone; NRS = Natural Resources Section; RCW = Red-cockaded Woodpecker; U.S. = United States

| Determination of Impacts | Other Species Considered |
|---|--------------------------|
| Table 4-4. Selected Army Training Activities Allowed/Not Allowed Within 200 Feet of Marked RCW Cavity Tree | |
| Mission Activity | Allowed |
| Maneuver and Bivouac: | |
| Hasty defense, light infantry, hands and hand tool digging only, no deeper than 2 feet, 2 hours MAX | Yes |
| Hasty defense, mechanized infantry/armor | No |
| Deliberate defense, light infantry | No |
| Deliberate Defense, mechanized infantry/armor | No |
| Establish command post, light infantry | No |
| Establish command post, mechanized infantry/armor | No |
| Assembly area operations, light infantry/mech infantry/armor | No |
| Establish CS/CSS sites | No |
| Establish signal sites | No |
| Foot Transit through the Cluster | Yes |
| Wheeled Vehicle Transit through the Cluster (1) | Yes |
| Armored Vehicle Transit through the Cluster (1) | Yes |
| Cutting Natural Camouflage, Hard Wood Only | Yes |
| Establish Camouflage Netting | No |
| Vehicle Maintenance for No More than 2 Hours | Yes |
| Weapons Firing: | |
| 7.62 mm and Below Blank Firing | Yes |
| .50 cal Blank Firing | Yes |
| All others | No |
| Noise: | |
| Generators | No |
| Artillery/Hand Grenade Simulators | Yes |
| Hoffman type devices | Yes |
| Pyrotechnics/Smoke: | |
| CS/Riot Agents | No |
| Smoke, Haze Operations Only, Generators or Pots, Fog Oil and/or Graphic Flakes (2) | Yes |
| Smoke Grenades | Yes |
| Incendiary Devices to Include Trip Flares | Yes |
| Star Clusters/Parachute Flares | Yes |
| HC Smoke of any Type | No |
| Digging: | |
| Tank Ditches | No |
| Deliberate Individual Fighting Positions | No |
| Crew-served Weapons Fighting Positions | No |
| Vehicle Fighting Positions | No |
| Other Survivability/Force Protection Positions | No |
| Vehicle Survivability Positions | No |

Source: U.S. Army, 2006

1. Vehicles will not get any closer than 50 feet of a marked cavity tree unless on existing roads, trails, or firebreaks.
2. Smoke generators and smoke pots will not be set up within 200 feet of a marked cavity tree, but the smoke may drift through the 200-foot circle around a cavity tree.

| | |
|---------------------------------|---------------------------------|
| Determination of Impacts | Other Species Considered |
|---------------------------------|---------------------------------|

4.2 OTHER SPECIES CONSIDERED

4.2.1 Gopher Tortoise

Certain operations may take place in close proximity to burrows of the state-listed gopher tortoise. While it is possible that vehicles could crush an individual tortoise, burrow, or egg clutch during these exercises, this risk will be minimal due to the fact that vehicle use by most user groups will be limited to established roads and trails. Vehicle operators will be directed to avoid gopher tortoises and gopher tortoise burrows, and to immediately report any sightings to the Natural Resources Section. If the burrow is in an area where frequent off-road activity occurs, the Natural Resources Section will evaluate the need for relocation and apply for relocation permits as appropriate. Digging will not be permitted within 25 feet of a gopher tortoise burrow. Additionally, surveys of frequently used LZs will determine the need for relocation.

Chemical residue from small-arms blanks, flares, ground burst simulators, and smokes has the potential to impact gopher tortoise health if ingested or accumulated in soils and water. However, cleanup procedures will require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after a training mission is completed. Post-mission site surveys will be required to ensure debris has been removed.

Due to restrictions on where vehicle use and digging can occur, along with required cartridge and debris cleanup (Table 4-5), overall impacts to gopher tortoises will not be significant.

4.2.2 Florida Black Bear

The state-listed black bear is a transient species that may pass through the action areas. The primary potential impact from ground maneuvers would be from vehicle strikes. To minimize this potential, Eglin will direct troops to be alert to the potential presence of black bears, and require that troops take measures to avoid injury to black bears (Table 4-5). Encounters with black bears are unlikely, and Eglin requirements will minimize the potential for injury or death to bears.

The black bear may be exposed to noise from blank fire in interstitial areas. This species uses a number of different habitats on Eglin, as indicated by documented sightings throughout the Eglin Reservation. Bears are not limited to any particular geographic area on Eglin and would be free to avoid noise and disturbance from munitions.

Impacts to the black bear from the Proposed Action will not be significant.

| Determination of Impacts | Other Species Considered |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

4.2.3 Florida Bog Frog

Increased off-road vehicle use in interstitial areas may cause habitat degradation in bog frog habitat. However, restrictions on off-road vehicle use and ground-disturbing activities (i.e., digging, bivouac) within 100 feet of Florida bog frog streams will minimize potential impacts from ground maneuvers.

Chemical residue from small-arms blanks, flares, ground burst simulators, and smokes has the potential to impact bog frog health if ingested or accumulated in soils and water. Because aquatic species are particularly susceptible to chemical impacts, Eglin Eglin will restrict the release of chemicals or metals into streams and the release of toxic aerosols within 300 feet of streams (Table 4-5). Cleanup procedures will require that munitions cartridges and debris from ground burst simulators, flares, and smokes be picked up after a training mission has been completed. Post-mission site surveys will ensure debris has been removed.

Impacts to the Florida bog frog from the Proposed Action will not be significant.

4.2.4 Gopher Frog

Of main concern regarding the state-listed gopher frog is the potential to impact any of the breeding sites within the training footprint. Eglin's restriction of driving, digging, and large troop movements in wetlands will minimize the potential for impacts to the gopher frog from ground maneuvers. The use of pyrotechnics increases the risk of wildfires, which could lead to damage in gopher frog habitat if fire suppression activities are necessary. With every wildfire, there is the potential for hydrologic alteration of gopher frog habitat from fire suppression activities. However, Eglin strives to avoid ground-disturbing fire suppression activities (bulldozers) in wetland habitats, especially flatwoods salamander and gopher frog ponds. Additionally, user groups will follow Eglin's *Wildfire Specific Action Guide Restrictions* (U.S. Air Force, 2006b), which will help to reduce wildfire ignitions. To minimize potential chemical impacts, smokes, simulators, and flares shall not be used within 100 feet of water bodies and shall never be thrown directly into a water body (Table 4-5). Given the avoidance and minimization measures in Table 4-5, impacts to the gopher frog will not be significant.

4.2.5 Pine Barrens Tree Frog

The state-listed pine barrens tree frog is typically found in herbaceous and shrubby bogs. As with the gopher frog, Eglin's restriction of ground disturbing activities in wetlands, avoidance of fire suppression activities in wetland habitats, and restrictions on pyrotechnics use near wetlands will minimize the potential for impacts to the pine barrens tree frog (Table 4-5); therefore, impacts to the pine barrens tree frog will not be significant.

| Determination of Impacts | Other Species Considered |
|--------------------------|--------------------------|
|--------------------------|--------------------------|

4.2.6 Florida Pine Snake

Incidental contact with vehicles and troops on foot could result in trampling or crushing of the state-listed Florida pine snake. However, this occurrence is unlikely, as the snake would most likely move away from the area if it sensed a general disturbance in its vicinity. While potential adverse impacts to individual snakes could occur if encountered during project activities, impacts to overall populations at Eglin would be minimal, considering Eglin has many thousands of acres that provide suitable habitat for the species. Thus, impacts to the Florida pine snake from ground maneuvering will not be significant.

4.2.7 Southeastern American Kestrel

The state-listed southeastern American kestrel may be affected by noise and human presence associated with troop and vehicle movements and blank fire. However, ground maneuvers typically are clandestine operations comprised of a small number of troops, who would not stay in any area for long and would be relatively quiet except for some vehicle noise on established roads. Southeastern American kestrels will be exposed intermittently to noise from blank fire, but studies indicate that predatory birds such as the kestrel typically acclimate to noise disturbances over time (Anderson et al., 1989; Larkin, 1996). Thus, impacts to the southeastern American kestrel will not be significant.

4.2.8 Migratory Birds

The Armed Forces are exempted from the incidental taking of migratory birds during military readiness activities (such as those being conducted in the interstitial area), except in cases where an activity would likely cause a significant adverse effect to the population of a migratory bird species. Interstitial activities, particularly those in riparian areas, may temporarily disturb migratory birds, but no clearing or construction would occur, making the possibility of direct physical impacts to birds, nests, eggs, and habitat low. Also, vehicles must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams, thus protecting migratory birds in riparian areas. Interstitial training would not result in a significant negative impact on migratory birds, thus interstitial training is exempt.

D**Determination of Impacts****Other Species Considered****4.2.9 Avoidance and Minimization Measures**

Interstitial user groups, Eglin NRS, and Eglin AFB will implement the avoidance and minimization measures below to reduce or remove impacts to state-listed species from interstitial activities (Table 4-5).

Table 4-5. Avoidance and Minimization Measures for State-listed T&E Species Affected by Interstitial Activities

| Activity | Avoidance and Minimization Measures | Florida Black Bear | Gopher Tortoise | Gopher Frog | Pine Barrens Tree Frog | Florida Bog Frog | SE American Kestrel |
|------------------|--|--------------------|-----------------|-------------|------------------------|------------------|---------------------|
| Ground Maneuvers | Cease vehicular activity if a black bear or gopher tortoise is sighted, and wait until the animal is out of harm's way before resuming activity. Notify the NRS. | ✓ | ✓ | | | | |
| | Avoid active, inactive, and abandoned gopher tortoise burrows by a minimum of 25 feet. Immediately notify the Natural Resources if one is sighted. | | ✓ | | | | |
| | In areas where frequent off-road activity may occur, the NRS will evaluate the need for gopher tortoise relocation. If relocation is necessary, Eglin will apply for a relocation permit from the Florida Fish and Wildlife Conservation Commission (FWC), and follow guidelines established by the FWC for transportation and release of tortoises. | | ✓ | | | | |
| | Mark sensitive species habitat on field maps. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Tree cutting is limited to sand pine, live oak (for tree thinning only), and scrub oak. Do not cut down longleaf pine trees for any reason, unless approved in writing by the NRS. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Table 4-5. Avoidance and Minimization Measures for State-listed T&E Species Affected by Interstitial Activities, Cont'd

| Activity | Avoidance and Minimization Measures | Florida Black Bear | Gopher Tortoise | Gopher Frog | Pine Barrens Tree Frog | Florida Bog Frog | SE American Kestrel |
|----------|---|--------------------|-----------------|-------------|------------------------|------------------|---------------------|
| | Wheeled vehicles must remain on existing trails/roads (except for the 23 Special Tactics Squadron (23 STS), 7SFG(A), ARG/MEU, and ALARNG, which have been approved for off-road vehicle use). | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | For permitted off-road vehicle use, vehicles must avoid driving in wetlands, floodplains, and on steep slopes. | | | ✓ | ✓ | ✓ | |
| | Keep digging to a minimum – do not dig holes deeper than 3 feet, especially within 100 feet of any stream. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Do not establish new cleared areas (bivouac, fighting position, etc.) within 100 feet of any water body, wetland, or floodplain, or on steep slopes. | | | ✓ | ✓ | ✓ | |
| | Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams. | | | | | ✓ | |
| | For activities that require digging, such as the establishment of fighting positions, troops shall fill in holes once they are finished and cover them with pine straw or leaves to minimize erosion potential. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | To reduce potential seed sources, treat areas with known invasive non-native species problems. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Do not drive vehicles in areas with known invasive non-native plant species problems. If a vehicle is driven in such an infested area, clean the vehicle before it is driven to a non-infested area. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

4-20

Table 4-5. Avoidance and Minimization Measures for State-listed T&E Species Affected by Interstitial Activities, Cont'd

| Activity | Avoidance and Minimization Measures | Florida Black Bear | Gopher Tortoise | Gopher Frog | Pine Barrens Tree Frog | Florida Bog Frog | SE American Kestrel |
|----------------------------|--|--------------------|-----------------|-------------|------------------------|------------------|---------------------|
| | Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Munitions and Pyrotechnics | Avoid pyrotechnics and munitions use in water bodies. | | | ✓ | ✓ | ✓ | |
| | Pick up munitions cartridges and debris from pyrotechnics after the training mission is complete. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Conduct post-mission site surveys to ensure debris has been removed. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Do not use smokes, simulators, flares, and other pyrotechnics within 100 feet of water bodies and never be throw them directly into a water body. | | | ✓ | ✓ | ✓ | |
| | Do not directly release chemicals or metals into the streams, or release toxic aerosols within 300 feet of streams. Additionally, do not release chemicals or metals in wind speeds greater than 10 knots. | | | ✓ | ✓ | ✓ | |
| | Follow Eglin's Wildfire Specific Action Guide Restrictions (U.S. Air Force, 2006b). | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Develop wildfire operational plans with Eglin NRS to identify high wildfire risk conditions and notification procedures that units will follow to engage fire response personnel when needed. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Immediately notify Eglin Fire Department Dispatch of any wildfire started as a result of pyrotechnics use. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

4-21

Table 4-5. Avoidance and Minimization Measures for State-listed T&E Species Affected by Interstitial Activities, Cont'd

| Activity | Avoidance and Minimization Measures | Florida Black Bear | Gopher Tortoise | Gopher Frog | Pine Barrens Tree Frog | Florida Bog Frog | SE American Kestrel |
|----------------|---|--------------------|-----------------|-------------|------------------------|------------------|---------------------|
| | Provide additional wildland fire resources at Eglin. | √ | √ | √ | √ | √ | √ |
| | Avoid ground disturbing fire suppression activities (bulldozers) in wetland habitats. | | | √ | √ | √ | |
| | Continue prescribed burning as much as possible in fire-dependent habitats. | √ | √ | √ | √ | √ | √ |
| | Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary. | √ | √ | √ | √ | √ | √ |
| Air Operations | To ensure complete flare burnout prior to reaching the surface, release flares at a minimum altitude of 500 feet above ground level when not over authorized test areas. | √ | √ | √ | √ | √ | √ |
| | Do not use flares for air operations when surface winds exceed 15 knots or when the fire danger level prohibits use of flares. | √ | √ | √ | √ | √ | √ |
| | Survey frequently used LZs for gopher tortoise burrows. Eglin's Natural Resources Section would evaluate the need for relocation, and apply for relocation permits as necessary. | | √ | | | | |
| | Do not locate any new LZs or DZs in wet habitats, particularly those supporting rare species (i.e., bog frog, pine barrens tree frog, and gopher frog). When possible, discontinue use of LZs and DZs in wet areas. | | | √ | √ | √ | |

DZ = Drop Zone; LZ = Landing Zone; NRS = Natural Resources Section

| Determination of Impacts | Other Species Considered |
|---------------------------------|---------------------------------|
|---------------------------------|---------------------------------|

A cumulative effects determination for interstitial training at Eglin AFB concludes that interstitial areas activities may affect, but are not likely to adversely affect any federally-listed species (Table 4-6).

Table 4-6. Cumulative Effects Determinations for Interstitial Activities

| Activity | RCW | Flatwoods Salamander | Indigo Snake | Okaloosa Darter |
|---------------------------------------|------------|---------------------------------|---------------------|------------------------|
| Troop Movements | NLAA | NLAA | NLAA | NLAA |
| Vehicle Movements | NLAA | NLAA | NLAA | NLAA |
| Munitions and Pyrotechnics | NLAA | NLAA | NLAA | NLAA |
| Air Operations | NLAA | NLAA | NLAA | NLAA |

NLAA= Not Likely to Adversely Affect

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

4-23

Determination of Impacts**Other Species Considered**

This page is intentionally blank.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

4-24

Conclusion**5. CONCLUSION**

Based on analysis of the potential impacts to federally protected species associated with the project area, interstitial training activities may affect, but are not likely to adversely affect any protected species. Avoidance and minimization measures will serve to mitigate potential impacts to sensitive species within interstitial areas.

The Eglin Natural Resources Section will notify the USFWS immediately if any of the actions considered in this BA are modified or if additional information on listed species becomes available, as a re-initiation of consultation may be required. If impacts to listed species occur beyond what has been considered in this assessment, all operations will cease and the USFWS will be notified. Any modifications or conditions resulting from consultation with the USFWS will be implemented prior to commencement of activities.

July 2008

**Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida**

5-1

Conclusion

This page is intentionally blank.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

5-2

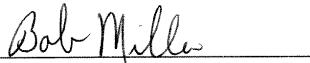
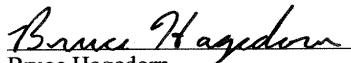
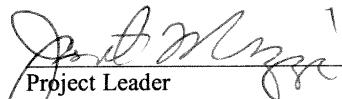
Signatures

6. SIGNATURES**INFORMAL CONSULTATION REGARDING
IMPACTS TO FEDERALLY LISTED SPECIES
RESULTING FROM INTERSTITIAL AREA
ACTIVITIES AT EGLIN AFB, FL**

Prepared by:


Mike Nunley and Stephanie Hiers
Environmental Scientists, SAIC
Eglin Natural Resources Section7-28-08
Date

Reviewed by:


Bob Miller
Endangered Species Biologist
Eglin Natural Resources Section7/30/08
Date
Bruce Hagedorn
Endangered Species Biologist
Chief, Wildlife Element
Eglin Natural Resources Section7/30/08
Date
Stephen M. Seiber
Chief, Eglin Natural Resources Section8/11/2008
Date**USFWS CONCURRENCE:**
Project Leader
U.S. Fish and Wildlife Service
Panama City, FL9/24/08
DateFWS Log No. 2008-I-0415

Signatures

This page is intentionally blank.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

6-2

References**7. REFERENCES**

Andersen, D.E., Rongstad, O.J., and W.R. Myton, 1989. Response of nesting red-tailed hawks to helicopter overflights. *Condor* 91:296-299.

Delaney D. K., L. L. Pater, R. H. Melton, B. A. MacAllister, R. J. Dooling, B. Lohr, B. F. Brittan-Powell, L. L. Swindell, T. A. Beatty, L. D. Carlile and E. W. Spadgenske, 2002. Assessment of Training Noise Impacts on the Red-cockaded Woodpecker: Final Report February 2002.

Florida Natural Areas Inventory (FNAI). 1993. Distribution of the Flatwoods Salamander (*Ambystoma cingulatum*) and the Gopher Frog (*Rana capito*) on Eglin Air Force Base, Florida, Year I. John G. Palis, Tallahassee, Florida.

-----, 2001. Field Guide to the Rare Animals of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.

Gault, K. 2006. Personal communication between Kathy Gault, Eglin Natural Resources Section, Wildlife, and Stephanie Hiers, SAIC. August 2006.

Larkin, R.P., 1996, Effects of Military Noise on Wildlife: A Literature Review, USACERL Technical Report 96/21, January, Center for Wildlife Ecology, Illinois Natural History Survey, Champaign, Illinois.

Pauly, G. B., O. Piskurek, and H. B. Shaffer. 2007. Phylogeographic concordance in the southeastern United States: the flatwoods salamander, *Ambystoma cingulatum*, as a test case. *Molecular Ecology* 16: 415-429.

Tucker, J.W., G.E. Hill, and N.R. Holler, 1996. Distribution of Nearctic-Neotropical Migrant and Resident Bird Species Among Habitats at Eglin and Tyndall Air Force Bases, Florida. Alabama Cooperative Fish and Wildlife Research Unit, Auburn University.

U.S. Air Force, 2003. ARG/MEU Readiness Training Final Environmental Assessment, Eglin AFB, FL. U.S. Marine Corps, Department of the Navy, and Air Armament Center, April 2003.

-----, 2004. Estuarine and Riverine Areas Final Programmatic Environmental Assessment. Department of the Air Force, Air Armament Center, Eglin Air Force Base, Florida. June 2004.

-----, 2004a. Estuarine and Riverine Programmatic Biological Assessment. CEG/CEVSN, July 2004.

-----, 2004b. Standard Protection Measures for the Eastern Indigo Snake. Revised 12 February 2004.

-----, 2005. Interstitial Area Environmental Baseline Document, Revision 1. 96 CEG/CEVSP Environmental Planning Section, Air Armament Center, Eglin AFB, Florida. March 2005.

-----, 2005a. Santa Rosa Island Mission Utilization Plan Programmatic Environmental Assessment. Eglin Air Force Base, FL. March, 2005.

-----, 2005b. Cape San Blas Environmental Baseline Document, Revision 1. 96 CEG/CEVSP Environmental Planning Section, Air Armament Center, Eglin AFB, Florida. August 2005.

-----, 2005c. Programmatic Biological Assessment for the Santa Rosa Island Mission Utilization Plan. CEG/CEVSN, March 2005.

-----, 2006. Beach Management Plan, Eglin AFB, FL. 96 CEG/CEVSN. February 2006.

-----, 2006a. Threatened and Endangered Species Component Plan, Eglin AFB, FL. 96 CEG/CEVSN.

-----, 2006b. Eglin's Wildfire Specific Action Guide Restrictions. Eglin Air Force Base. July, 2006.

July 2008

Final Informal ESA Section 7 Consultation for
Interstitial Area Activities at
Eglin Air Force Base, Florida

7-1

References

-----, 2007., Alabama Army National Guard Implementation of a Portion of the Master Plan for Cobb Training Site Final Environmental Assessment

-----, 2008. Proposed Implementation of the 2005 BRAC Decisions and Related Action at Eglin AFB Draft Environmental Impact Statement, which was released to the public in March 2008.

U.S. Army, 2006. Management Guidelines for the Red-cockaded Woodpecker on Army Installations. Retrieved from <https://www.denix.osd.mil/denix/Public/ES-Programs/Conservation/Woodpecker/woodp.html>, on 19 December 2006.

U.S. Fish and Wildlife Service (USFWS). 1998. Okaloosa Darter (*Etheostoma okaloosae*) Recovery Plan (Revised). Atlanta, GA 42p.

APPENDIX I

PUBLIC INVOLVEMENT

**Notice of Availability, Agency Comments,
and Air Force Responses to Comments**

PUBLIC INVOLVEMENT

Notice of Availability

The following Notice of Availability was published in the Northwest Florida Daily News on September 22, 2008. No public comments were received.

Public Notification

In compliance with the National Environmental Policy Act, Eglin Air Force Base announces the availability of the following Draft Range Environmental Assessment (REA) and Draft Finding of No Significant Impact (FONSI) for public review: RCS 97-305, "Interstitial Area Range Environmental Assessment, Revision 1 at Eglin Air Force Base, FL."

The Proposed Action of RCS 97-305, "Interstitial Area Range Environmental Assessment, Revision 1," is for the 46th Test Wing Commander to establish a new authorized level of activity for the interstitial area that is based on an anticipated maximum usage at Eglin Air Force Base, Florida. The interstitial area is defined as those areas within Eglin AFB's contiguous Range excluding the established test areas, two cantonment areas (Eglin Main Base, Hurlburt Field), Santa Rosa Island, Cape San Blas, Eglin Gulf Test and Training Range, and leased lands.

The Preferred Alternative is defined as authorizing a 300 percent increase in mission activity over the current and foreseeable future level of activity with additional management actions imposed on interstitial activities. A 300 percent increase would occur for all types of interstitial activity, including troop movement on foot, troop movement by vehicle, bivouac use, and assault zone use, as well as the use of ordnance, pyrotechnics, smokes, chaff, and flares. A 300 percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency.

Copies of the Draft REA and Draft FONSI will be available for review from September 22 through October 7, 2008 at the following libraries:

- Fort Walton Beach Public Library, 105 SE Miracle Strip Pkwy, Ft. Walton Beach, FL
- Destin Library, 150 Sibert Avenue, Destin, FL
- Freeport Branch Library, 76 Highway 20 West, Freeport, FL
- Milton Library, 5541 Alabama Street, Milton, FL
- Niceville Public Library, 206 North Partin Drive, Niceville, FL
- Navarre Library, 8484 James M. Harvell Road, Navarre, FL
- Walton-Defuniak Library, 3 Circle Drive, Defuniak Springs, FL

For more information on these actions, please contact Mr. Mike Spaits, 96th Civil Engineer Group Environmental Public Affairs, at (850) 882-2878, or email at mike.spaits@eglin.af.mil.

2047205

Agency Comments



Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

November 21, 2008

Ms. Judy Ramsey
Department of the Air Force
96 CEG/CEVSP
501 DeLeon Street, Suite 101
Eglin AFB, FL 32542-5133

RE: Department of the Air Force – Draft Range Environmental Assessment
for Interstitial Area on Eglin Air Force Base – Okaloosa, Santa Rosa and
Walton Counties, Florida.
SAI # FL200809224440C

Dear Ms. Ramsey:

The Florida State Clearinghouse has coordinated a review of the referenced Draft Range Environmental Assessment (REA) under the following authorities: Presidential Executive Order 12372; Section 403.061(40), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended. The following state agency comments are provided for consideration in finalizing the REA.

The Northwest Florida Water Management District (NFWFMD) has provided a number of comments and requests that additional information be provided on the potential long-term and cumulative environmental effects of increased lead and perchlorate use if the preferred alternative is implemented. Although the Draft REA is very thorough and proposes management activities to prevent environmental impacts, there remains concern regarding the cumulative impacts of lead deposition on soil and groundwater resources. For further information, please refer to the enclosed NFWFMD memorandum.

The Florida Department of Environmental Protection's (DEP) Northwest District Office in Pensacola notes that the Draft REA states that Eglin Air Force Base (AFB) is currently designated as in attainment for air quality. The DEP is in the process of starting up an ambient air quality monitor in Okaloosa County to determine its attainment status. Depending on the results, the county may be designated as non-attainment for ozone in the future. The DEP recommends that air quality issues be re-evaluated to determine what changes, if any, need to be made.

"More Protection, Less Process"
www.dep.state.fl.us

Ms. Judy Ramsey
November 21, 2008
Page 2 of 2

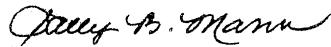
Staff also notes that the best management practices (BMPs) detailed in the report are general in nature. Given the variety of ecosystems located on Eglin AFB and the proposed level of activities undertaken by Eglin AFB, a general approach may not be appropriate. The proposed 1:2 ratio (one day of use/two days of nonuse) BMP is a good proactive measure, but may not be sufficient given the variety of terrain and usage types. The DEP recommends that BMPs tailored for specific site conditions and proposed activities be utilized. At a minimum, DEP recommends that a monitoring and maintenance program be established to monitor environmental quality at use areas to ensure the BMPs effectively prevent resource degradation.

Finally, much of the analysis seems to take an identified impact (i.e., lead from ammunition) and divide the impact by the total acreage of interstitial area. Staff states that this impact assessment methodology may not be appropriate, given the fact that not all acreage would be utilized for all potential purposes.

Based on the information contained in the Draft REA and the comments provided by our reviewing agencies, the state has determined that, at this stage, the proposed project is consistent with the Florida Coastal Management Program (FCMP). The issues identified by the state agencies must, however, be addressed prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage, if applicable.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Ms. Lori Cox at (850) 245-2168.

Yours sincerely,



Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lec
Enclosures

cc: Darryl Boudreau, DEP, Northwest District
Duncan Cairns, NFWFMD



Florida

Department of Environmental Protection

"More Protection, Less Process"



Categories

[DEP Home](#) | [OIP Home](#) | [Contact DEP](#) | [Search](#) | [DEP Site Map](#)

| Project Information | |
|--|---|
| Project: | FL20080922440C |
| Comments Due: | 10/27/2008 |
| Letter Due: | 11/21/2008 |
| Description: | DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT FOR INTERSTITIAL AREA ON EGLIN AIR FORCE BASE - OKALOOSA, SANTA ROSA AND WALTON COUNTIES, FLORIDA. |
| Keywords: | USAF - DEA INTERSTITIAL AREA ON EGLIN AFB - OKALOOSA/SANTA ROSA/WALTON CO. |
| CFDA #: | 12.200 |
| Agency Comments: | |
| WALTON - | |
| WEST FLORIDA RPC - WEST FLORIDA REGIONAL PLANNING COUNCIL | |
| No Comments | |
| OKALOOSA - OKALOOSA COUNTY | |
| SANTA ROSA - SANTA ROSA COUNTY | |
| FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION | |
| NO COMMENT BY FRED ROBINETTE 10/14/2008. | |
| STATE - FLORIDA DEPARTMENT OF STATE | |
| No Comment/Consistent | |
| TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION | |
| No Comment/Consistent | |
| ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION | |
| The DEP Northwest District Office in Pensacola notes that the Draft REA states that Eglin Air Force Base (AFB) is currently designated as in attainment for air quality. The DEP is in the process of starting up an ambient air quality monitor in Okaloosa County to determine its attainment status. Depending on the results, the county may be designated as non-attainment for ozone in the future. The DEP recommends that air quality issues be re-evaluated to determine what changes, if any, need to be made. Staff also notes that the best management practices (BMPs) detailed in the report are general in nature. Given the variety of ecosystems located on Eglin AFB and the proposed level of activities undertaken by Eglin AFB, a general approach may not be appropriate. The proposed 1:2 ratio (one day of use/two days of nonuse) BMP is a good proactive measure, but may not be sufficient given the variety of terrain and usage types. The DEP recommends that BMPs tailored for specific site conditions and proposed activities be utilized. At a minimum, DEP recommends that a monitoring and maintenance program be established to monitor environmental quality at use areas to ensure the BMPs effectively prevent resource degradation. Finally, much of the analysis seems to take an identified impact (i.e., lead from ammunition) and divide the impact by the total acreage of interstitial area. Staff states that this impact assessment methodology may not be appropriate, given the fact that not all acreage would be utilized for all potential purposes. | |
| NORTHWEST FLORIDA WMD - NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT | |
| The NFWFMD has provided a number of comments and requests that additional information be provided on the potential long-term and cumulative environmental effects of increased lead and perchlorate use if the preferred alternative is implemented. Although the Draft Range EA is very thorough and proposes management activities to prevent environmental impacts, there remains concern regarding the cumulative impacts of lead deposition on soil and groundwater resources. | |

| | | | | | |
|---|---|--|--|------------------------|----------------------------|
| <p>COUNTY: ALL</p> <p>RECEIVED SEP 23 2008 NWFWM HAVANA</p> | <p>DATE: 9/22/2008 COMMENTS DUE DATE: 10/27/2008 CLEARANCE DUE DATE: 11/21/2008 SAI#: FL200809224440C</p> | | | | |
| <p>MESSAGE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; padding: 5px;"> STATE AGENCIES ENVIRONMENTAL PROTECTION FISH and WILDLIFE COMMISSION STATE TRANSPORTATION </td> <td style="width: 25%; padding: 5px;"> WATER MNGMT. DISTRICTS X NORTHWEST FLORIDA WMD </td> <td style="width: 25%; padding: 5px;"> OPB POLICY UNIT </td> <td style="width: 25%; padding: 5px;"> RPCS & LOC GOVS </td> </tr> </table> | | STATE AGENCIES ENVIRONMENTAL PROTECTION FISH and WILDLIFE COMMISSION STATE TRANSPORTATION | WATER MNGMT. DISTRICTS X NORTHWEST FLORIDA WMD | OPB POLICY UNIT | RPCS & LOC GOVS |
| STATE AGENCIES ENVIRONMENTAL PROTECTION FISH and WILDLIFE COMMISSION STATE TRANSPORTATION | WATER MNGMT. DISTRICTS X NORTHWEST FLORIDA WMD | OPB POLICY UNIT | RPCS & LOC GOVS | | |
| <p>The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:</p> <ul style="list-style-type: none"> – Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity. X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection. – Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection. – Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit. | | | | | |
| <p>Project Description: DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT FOR INTERSTITIAL AREA ON EGLIN AIR FORCE BASE - OKALOOSA, SANTA ROSA AND WALTON COUNTIES, FLORIDA. </p> | | | | | |
| <p>To: Florida State Clearinghouse EO. 12372/NEPA Federal Consistency</p> <p>AGENCY CONTACT AND COORDINATOR (SCH) 3900 COMMONWEALTH BOULEVARD MS-47 TALLAHASSEE, FLORIDA 32399-3000 TELEPHONE: (850) 245-2161 FAX: (850) 245-2190</p> <p>From: Division/Bureau: _____ Reviewer: _____ Date: <u>28 OCT 2008</u></p> <p>Date: _____</p> | | | | | |
| <p> <input type="checkbox"/> No Comment <input checked="" type="checkbox"/> Consistent/Comments Attached <input checked="" type="checkbox"/> Comment Attached <input type="checkbox"/> Inconsistent/Comments Attached <input type="checkbox"/> Not Applicable <input type="checkbox"/> Not Applicable </p> | | | | | |

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

MEMORANDUM

TO: Paul Thorpe, Director, Resource Planning Section
 FROM: Leigh Brooks, Water Resource Planner
 DATE: September 30, 2008
 SUBJECT: Eglin AFB NEPA Range Environmental Assessment

BACKGROUND

2.4 PREFERRED ALTERNATIVE, pg 2-8, 18 - "The Preferred Alternative is Alternative 2, which allows a 300 percent increase in interstitial operations over the current level of activity plus foreseeable future activities. Implementation of management actions (Appendix B) will allow a surge in training activities while minimizing impacts to environmental and natural resources...Long-term and cumulative impacts to the affected environment have not been identified under this alternative."

Table 2-4. Summary of Issues and Potential Impacts Under All Alternatives

Impacts to water resources regarding lead and perchlorate: "Significant effects on water resources as a result of troop movement, assault zone use, or bivouac are not expected, assuming the management actions are implemented. Munitions and pyrotechnic use would increase further under this alternative, but effects from lead and perchlorate are not expected to be of concern. This alternative would have an increased potential for surface water effects from the use of smoke grenades."

LEAD**Environmental Consequences to Water Resources**

4.3.3 Alternative 2, Small Arms pg. 4-13, 30 - "This alternative would potentially result in the amount of airborne lead emissions available for deposition into surface waters and wetlands of 66,074 pounds per year. If evenly deposited over an area of 96,000 acres the amount of lead per acre would be 0.69 pounds. Based on previous analysis for lead in soil from small-arms projectiles, this level would not pose an ecological concern according to USEPA thresholds...Because of its tendency to bind to soil this lead would become primarily a soil toxicity and biological concern, rather than a water resource concern." However, this is not addressed in impacts to biological resources.

Pg 4-23 Table 4-13. Munitions-Related Residue Under Alternative 2

| Chemical | Quantity in Interstitial Area (pounds) |
|----------|--|
| Lead | 66,074 |

PERCHLORATE

4.3.1 **No Action Alternative**, Pg 4-10,1 - Ordnance - "Ground burst simulator contain perchlorate and outnumber other ordnance items in terms of frequency of use. Perchlorate has been identified by the EPA as a drinking water contaminant and human health concern primarily for its tendency to persist once in groundwater...Encounter with clayey soils will slow or stop downward progress, impeding access to the Floridan aquifer, the source of most potable water in the study area. The most likely risk of contamination would therefore be to groundwater in the

Surficial, or Sand and Gravel aquifer, which is nearer to the surface. Once entrained, perchlorate could potentially move laterally through soil into surface waters."

"There is a current FWS guideline of 0.25 miles between a given activity and a surface water to prevent contact from some contaminant. The 0.25 mile guideline is not part of any current Air Force BMP."

Pg. 4-12, 23 – "The Army recognizes that perchlorate is an issue and has stated it will remove this component from their simulators by 2009 (Hartley et al, 2007). It is possible that any increase in activity proposed for this alternative would not occur until after then."

Ordnance pg 4-14, 1 - "Alternative 2 would release from 123,624 simulator items approximately 2,47 pounds of perchlorate into the interstitial area... implementation of this alternative and the proposed increase in use would likely occur after 2009, when simulators would contain non-perchlorate formulations."

EROSION/SEDIMENTATION

4.3.3 **Alternative 2**, pg. 4-13, 13 - Troop Movement by Vehicle - "As with the No Action Alternative and Alternative 1, those areas presently undergoing some type of erosion could be worsened and new problem areas could arise with the increase in off-road activity. Water quality impacts from soil erosion would be potentially severe for those areas already undergoing substantial erosion."

Management activities to limit impacts include specifying minimum distances that vehicles must remain away from streams and wetlands except in designated crossings, and only then for certain permitted vehicles and training activities. Designated crossings are not located in Okaloosa darter streams.

GIS ANALYSIS:

- East side of base a Sensitive Karst Area
- Portion of east side of base FAVA more vulnerable
- Base training and cantonment areas do not occur in these sensitive areas

COMMENTS

- Environmental assessment very thorough, demonstrating awareness of multiple impacts from various activities.
- Proposed management activities to prevent environmental impacts are good.
- There remains concern about cumulative impacts of lead deposition.

COUNTY: ALL
SCH-USAF-EG
2008-6181

DATE: 9/22/2008
COMMENTS DUE DATE: 10/27/2008
CLEARANCE DUE DATE: 11/21/2008
SAI#: FL200809224440C

MESSAGE:

| STATE AGENCIES |
|------------------------------|
| ENVIRONMENTAL PROTECTION |
| FISH and WILDLIFE COMMISSION |
| X STATE |
| TRANSPORTATION |

| WATER MNGMT. DISTRICTS |
|------------------------|
| NORTHWEST FLORIDA WMD |

| OPB POLICY UNIT |
|-----------------|
|-----------------|

| RPCS & LOC GOVS |
|-----------------|
|-----------------|

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT FOR INTERSTITIAL AREA ON EGLIN AIR FORCE BASE - OKALOOSA, SANTA ROSA AND WALTON COUNTIES, FLORIDA.

To: Florida State Clearinghouse

EO. 12372/NEPA Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)
3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

No Comment No Comment/Consistent
 Comment Attached Consistent/Comments Attached
 Not Applicable Inconsistent/Comments Attached
 Not Applicable

From:

Division of Historical Resources
Bureau of Historic Preservation

Division/Bureau:

Reviewer: Edwards, S.

Laura A. Kammeyer
Deputy SHPO

Date: 9-29-20089-29-2008

RECEIVED
2008 SEP 25 A 9:59
RECEIVED
BUREAU OF
HISTORIC PRESERVATION

RECEIVED

SEP 30 2008

DEP Office of
Intergov't Programs

Page 1 of 1

Sands, Amy L.

From: Duncan Cairns [Duncan.Cairns@nfwmd.state.fl.us]
Sent: Thursday, January 29, 2009 1:48 PM
To: Sands, Amy L.
Cc: Judy.Ramsey@eglin.af.mil; Lauren Milligan; Darryl.Boudreau@dep.state.fl.us; lori.cox@dep.state.fl.us
Subject: SAI # FL200809224440C

Greetings Amy Sands – I hope you are doing well and it was a pleasure talking with you. I'd previously been forwarded your e-mail, written on behalf of Judy Ramsey, requesting a meeting regarding the referenced Clearing House item. I've reviewed the comments submitted by the Northwest Florida Water Management District and the Florida Department of Environmental Protection. Our comments were very general in nature and concluded that the environmental assessment and proposed management activities were good and that the applicant was well aware of the potential for adverse impacts. We did express concern over cumulative impacts from lead deposition but did not specify any further recommendations in the comments and this comment was made as a general concern of which the applicant was aware. The FDEP did recommend more specific BMPs and an enhanced monitoring/maintenance program. At this point, we don't feel there is a need for us to meet directly with you regarding our comments but there may be benefit in further discussing FDEP's more specific concerns. In situations such as this, we would defer to any recommendations from FDEP regarding water quality or potential pollutants. Thank you ever so much for your time and patience. Duncan Jay Cairns

Duncan Jay Cairns
Chief, Bureau of Environmental and Resource Planning
Northwest Florida Water Management District

NOTICE: E-mail communications to or from Northwest Florida Water Management District employees regarding state business are considered to be public records. Florida's public records law requires these communications be made available to the public and media upon request.

3/16/2009

Air Force Responses to Comments on the Draft REA

| Comment | Response |
|--|--|
| <p>FDEP's Northwest District Office in Pensacola notes that the Draft REA states that Eglin is currently designated as in attainment for air quality. The DEP is in the process of starting up an ambient air quality monitor in Okaloosa County to determine its attainment status. Depending on the results, the county may be designated as non-attainment for ozone in the future. The DEP recommends that air quality issues be re-evaluated to determine what changes, if any, need to be made.</p> | <p>During discussions with FDEP personnel on 11 February 2009 Mr. Boudreax indicated that this comment was provided to raise awareness of potential future changes to Okaloosa County's attainment status and no changes to air quality analysis in the Interstitial REA are required.</p> <p>The Air Force acknowledges the potential for future changes to the attainment status of Okaloosa County. Future air quality analyses and NEPA documentation will address the new attainment status and any proposed regulations once a decision has been made and specific State Implementation Plan changes are in place.</p> |
| <p>Finally, much of the analysis seems to take an identified impact (i.e. lead from ammunition) and divide the impact by the total acreage of interstitial area. Staff states that is impact assessment methodology may not be appropriate, given the fact that not all acreage would be utilized for all potential purposes.</p> | <p>The water resources and soil analyses divided munitions use by the highest-use area of 96,000 acres (for a conservative analysis), as opposed to the total acreage of the Interstitial area (385,000 acres) or the total acreage of the defined training areas (329,255 acres). An analysis which would distribute munitions per user group, based on their respective training area, would reduce the impacts in terms of impacts per acre.</p> <p>Additionally, a review of the chemical materials analysis revealed an error in which a representative munitions type used in the analyses was a live munition instead of a blank munition. Only blank munitions are utilized in the interstitial area. This reduces the amount of lead expended into the air from 66,074 lbs to 257 lbs under the Preferred Alternative. In terms of lbs per acre, the amount of lead would be reduced from 0.69 to 0.0027 lbs per acre over the conservative high use area of 96,000 acres. The document has been updated to address this error.</p> |
| <p>Staff also notes that the BMPs detailed in the report are general in nature. Given the variety of ecosystems located on Eglin AFB and the proposed level of activities undertaken by Eglin AFB, a general approach may not be appropriate. The proposed 1:2 ratio BMP is a good proactive measure, but may not be sufficient given the variety of terrain and usage types. The DEP recommends that BMPs tailored for specific site conditions and proposed activities be utilized. At a minimum, DEP recommends that a monitoring and maintenance program be established to monitor environmental quality at use areas to ensure the BMPs effectively prevent resource degradation.</p> | <p>Thank you for the comments. Eglin AFB shares the expressed concerns about protecting the environment and will fully comply with all rules and permits issued for that purpose. Furthermore Eglin AFB will conduct any monitoring/sampling required by Federal, or State law. If any specific rules requiring monitoring/sampling which are applicable to this action are identified and provided, Eglin AFB will be pleased to address them.</p> |